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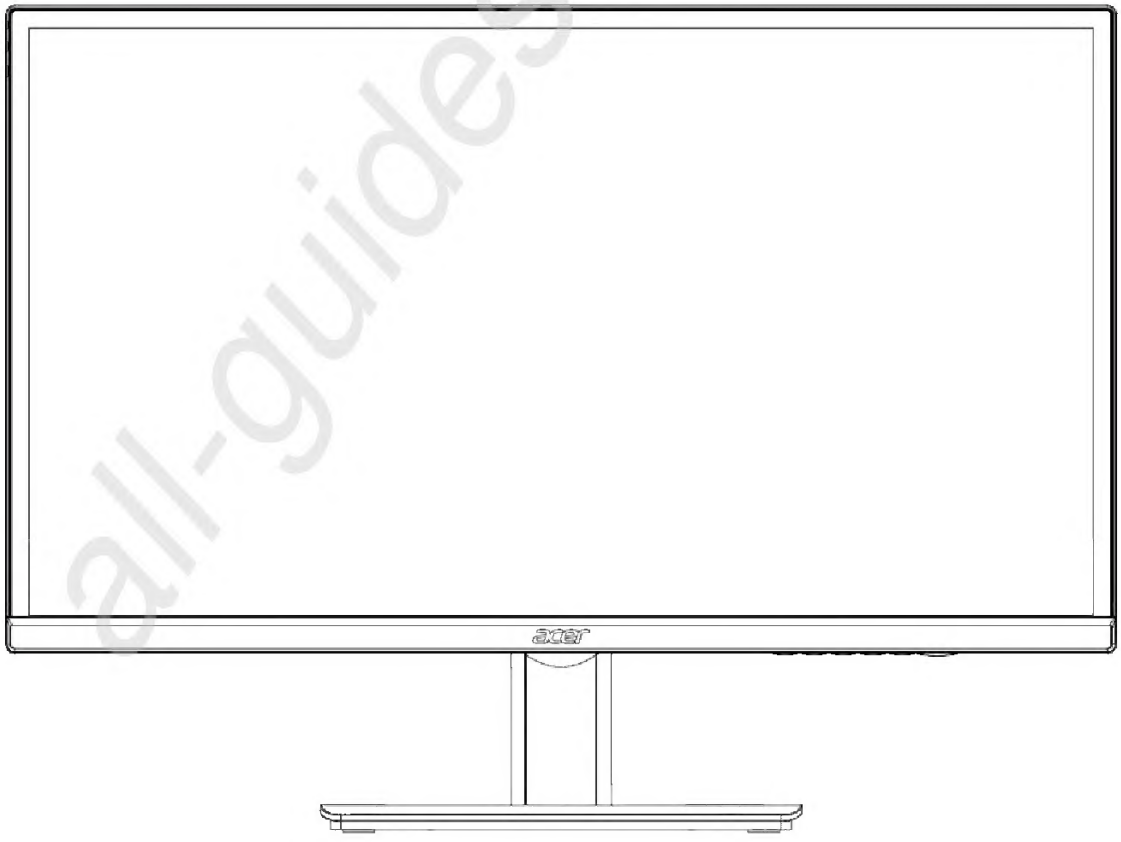
Service Manual



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Safety Notice

Any person attempting to service this chassis must familiarize with the chassis and be aware of the necessary safety precautions to be used when serving electronic equipment containing high voltage.

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Important Safety Notice

Product Announcement:

This product is certificated to meet RoHS Directive and Lead-Free produced definition. Using approved critical components only is recommended when the situation to replace defective parts. Vender assumes no liability express or implied, arising out of any unauthorized modification of design or replacing non-RoHS parts. Service providers assume all liability.

Qualified Repairability:

Proper service and repair is important to the safe, reliable operation of all series products. The service providers recommended by vender should being aware of notices listed in this service manual in order to minimize the risk of personal injury when perform service procedures. Furthermore, the possible existed improper repairing method may damage equipment or products. It is recommended that service engineers should have repairing knowledge, experience, as well as appropriate product training per new model before performing the service procedures.

NOTICE:

! To avoid electrical shocks, the products should be connect to an authorized power cord, and turn off the master power switch each time before removing the AC power cord.

! To prevent the product away from water or explosed in extremely high humility environment.

! To ensure the continued reliability of this product, use only original manufacturer's specified parts.

! To ensure following safety repairing behavior, put the replaced part on the components side of PWBA, not solder side.

! To ensure using a proper screwdriver, follow the torque and force listed in assembly and disassembly procedures to screw and unscrew screws.

! Using Lead-Free solder to well mounted the parts.

! The fusion point of Lead-Free solder requested in the degree of 220°C.

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1. Product Specification

1.1 Scope:

LCD LM230WF3-S2E2

LM230WF3-S2E2 is a Color Active Matrix Liquid Crystal Display with an integral Light Emitting Diode (LED) backlight system. The matrix employs a-Si Thin Film Transistor as the active element. It is a transmissive type display operating in the normally white mode. It has a 23.0 inch diagonally measured active display area with Full HD resolution (1080 vertical by 1920 horizontal pixel array) Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with

a 8-bit gray scale signal for each dot, thus, presenting a palette of more than 16,7M colors with Advanced-FRC(Frame Rate Control). It has been designed to apply the interface method that enables low power, high speed, low EMI. FPD Link or compatible must be used as a LVDS(Low Voltage Differential Signaling) chip. It is intended to support applications where thin thickness, wide viewing angle, low power are critical factors and graphic displays are important. In combination with the vertical arrangement of the sub-pixels, the LM230WF3-S2E2 characteristics provide an excellent flat panel display for office automation products such as monitors.

Active screen size	23 inches(58.42cm) diagonal
Outline Dimension	527.6 (H) x 309.7 (V) x 13.6 (D) mm(Typ.)
Pixel Pitch	0.0884*RGB(H)mm x 0.2652(V)mm
Pixel Format	1920 horiz. By 1080 vert. Pixels RGB stripes arrangement
Interface	LVDS 2Port
Color depth	16.7M colors
Luminance, white	250 cd/m2 (Center 1Point, typ)
Viewing Angle (CR>10)	R/L 178(Typ.), U/D 178(Typ.)
Power Consumption	Total 19.7 W(Typ.), (4.80 W@V_{LCD} , 14.9 W@W/O Driver)
Weight	2140 g (Typ.)
Display operating mode	Transmissive mode, Normally Black
Surface treatments	Hard coating (3H), Glare treatment of the front polarizer
Color Gamut	72%(Typ.) CIE 1931

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Optical Characteristics

Ta=25 °C, V_{LCD}=5.0V, f_V=60Hz, D_{CLK}=72MHz, Is=100mA

Parameter		Symbol	Values			Units	Notes
			Min	Typ	Max		
Contrast Ratio		CR	700	1000	-		1
Surface Luminance	white	L_{WH}	200	250	-	cd/m^2	2
Luminance Variation		δ_{WHITE}	75			%	3
Response Time (Gray to Gray)		GTG	-	14	28	ms	4
Color Coordinates [CIE1931] (By PR650)	RED	Rx	Typ -0.03	0.638	Typ +0.03		
		Ry		0.334			
	GREEN	Gx		0.309			
		Gy		0.627			
	BLUE	Bx		0.153			
		By		0.073			
	WHITE	Wx		0.313			
		Wy		0.329			
Viewing Angle (CR>10)							
	x axis, right(ϕ=0°)	θr	85	89		Degree	5
	x axis, left (ϕ=180°)	θl	85	89			
	y axis, up (ϕ=90°)	θu	85	89			
	y axis, down (ϕ=270°)	θd	85	89			
Crosstalk					1.5	%	6

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1.2 General Requirements:

1.2.1 Test Condition:

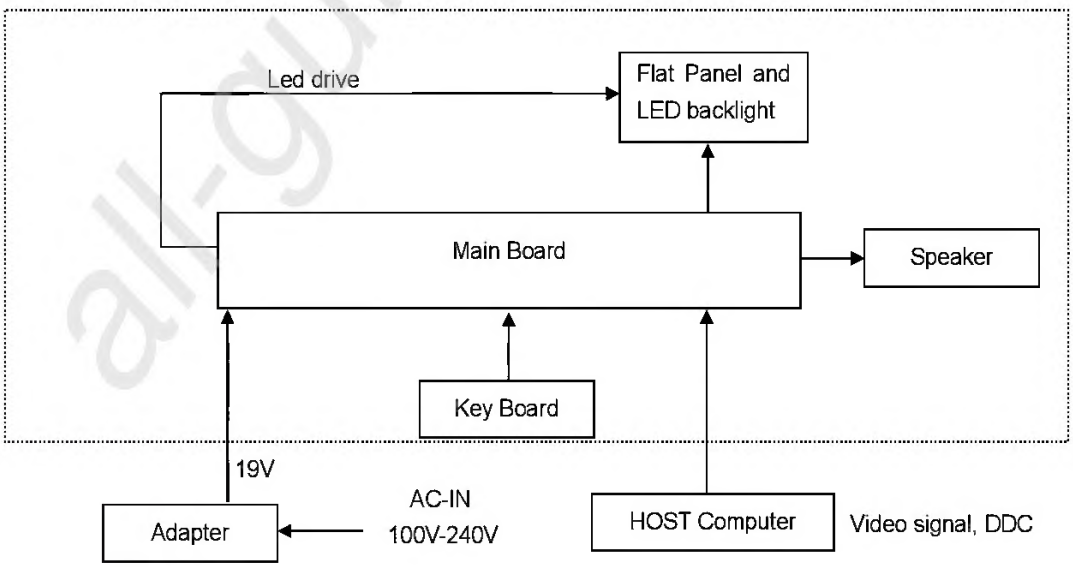
All tests shall be performed under the following conditions, unless otherwise specified.

Warm up time	> 30 min.
AC supply voltage	230V± 5%, 50± 3 Hz
Ambient temperature	20°C ± 5°C
Humidity	65% ± 20%
Display mode	1920 x 1080, 60 Hz, Pixel Clock: 148.5MHZ,all white
e-color mode	Set to "User" mode
Contrast control	Set to The value under user mode, which allows that the brightest two of 32 linear distributed gray-scales (0～ 700mv) can be distinguished.
Color temperature	6500°K
Brightness control	The value under user mode
Analog Input signal	700 mVss
Picture position and size	Factory preset value,
Viewing angle	90 ° H and V
Viewing distance	40 cm for LCD performance, 20 cm for LCD failures
Ambient illumination	Dark room (< 1 cd/m^2)

1.2.2 Test Equipment: CHROMA 6630.

1.3 Electrical:

This section describes the electrical requirement of the monitor. Below is the block diagram.



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The LCD monitor will contain a main board and a key board which house the flat panel control logic, brightness control logic and DDC. The adapter will provide AC to DC voltage to drive the main board chips each voltage. The function key board is used for OSD control, monitor power ON/OFF and the LED indicator for power status.

LCD Panel	Driving system	TFT Color LCD
	Pixel pitch	0.0884*RGB(H)mm x 0.2652(V)mm
	Contrast Ratio	1000(typ) /700(min)
	Response time	14ms (Typ.). 28ms(max)
	Luminance of White	250 cd/m2
Input	Separate Sync.	H/V TTL
	H-Frequency	30kHz-83kHz
	V-Frequency	56-75Hz
Viewing angle	H:178/ V:178(typ); H:170/ V:170(Min) (CR＞10)	
Display mode	1920 x 1080, 60 Hz	
EPA ENERGY STAR®	ON Mode	< 48W
	OFF Mode	< 2W
Power Source	100 V ~ 240 V, 50 ± 3Hz, 60 ± 3Hz	
Environmental Considerations	Operating Temp: 0° to 40°C Storage Temp: -20° to 60°C Operating Humidity: 15% to 90% Storage Humidity: 15% to 90% Operating Altitude: 12,000 feet Storage Altitude: 40,000 feet	
Peak surge current	< 55A peak at 240 VAC and cold starting	
Power line surge	No advance effects (no loss of information or defect) with a maximum of 1 half-wave missing per second	

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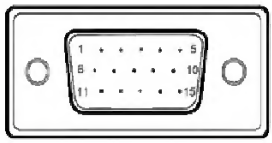
1.3.1 Interface Connectors:

1.3.1.1 Power Adaptor and Connector:

The AC inlet connector shall be an IEC 320-C13 male power receptacle for connection to mains power. The power cord shall be gray or black with length of 1.5m + 10cm/-0cm. The power cord type is different from regions.The adapter output cable length of 1500±36mm,voltage is 19v and current is 2.1A.

1.3.1.2 Analog Connector and Cable: The analog signal cable shall be Gray or black and 1.5m + 10cm/-0cm.

A. D-SUB

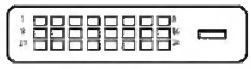


15-Pin Color Display Signal Cable

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1.	Red	9.	+5V
2.	Green	10.	Logic Ground
3.	Blue	11.	Monitor Ground
4.	Monitor Ground	12.	DDC-Serial Data
5.	DDC-return	13.	H-Sync
6.	R-Ground	14.	V-Sync
7.	G-Ground	15.	DDC-Serial Clock
8.	B-Ground		

B. DVI

24-Pin Color Display Signal Cable*



PIN	Meaning	PIN	Meaning
1.	TMDS Data2-	13.	NC
2.	TMDS Data2+	14.	+5V Power
3.	TMDS Data 2/4 Shield	15.	Logic Ground
4.	NC	16.	Hot Plug Detect
5.	NC	17.	TMDS Data0-
6.	DDC Clock	18.	TMDS Data0+
7.	DDC Data	19.	TMDS Data 0/S Shield
8.	NC	20.	NC
9.	TMDS Data1-	21.	NC
10.	TMDS Data1+	22.	TMDS Clock Shield
11.	TMDS Data 1/3 Shield	23.	TMDS Clock+
12.	NC	24.	DDC TMDS Clock-

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C. HDMI

19-Pin Color Display Signal Cable*

PIN	Meaning	PIN	Meaning
1.	TMDS Data2+	10.	TMDS Clock+
2.	TMDS Data2 Shield	11.	TMDS Clock Shield
3.	TMDS Data2-	12.	TMDS Clock-
4.	TMDS Data1+	13.	CEC
5.	TMDS Data1 Shield	14.	Reserved (N.C. on device)
6.	TMDS Data1-	15.	SCL
7.	TMDS Data0+	16.	SDA
8.	TMDS Data0 Shield	17.	DDC/CEC Ground
9.	TMDS Data0-	18.	+5V Power
		19.	Hot Plug Detect

D. LED backlight Connector

Connector: CN803

Pin No.	Symbol	Description	Notes
1	FB1	Channel1 Current Feed Back	
2	FB2	Channel2 Current Feed Back	
3	NC	No connection	
4	NC	No connection	
5	VLED	LED Power Supply	
6	VLED	LED Power Supply	
7	NC	No connection	
8	NC	No connection	
9	NC	No connection	
10	FB3	Channel3 Current Feed Back	

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F. Flat Panel Connector

Connector: CN406

Pin No	Symbol	Description
1	RXO0-	Minus signal of 1st channel 0 (LVDS)
2	RXO0+	Plus signal of 1st channel 0 (LVDS)
3	RXO1-	Minus signal of 1st channel 1 (LVDS)
4	RXO1+	Plus signal of 1st channel 1 (LVDS)
5	RXO2-	Minus signal of 1st channel 2 (LVDS)
6	RXO2+	Plus signal of 1st channel 2 (LVDS)
7	GND	Ground (AGP)
8	RXOC-	Minus signal of 1st clock channel (LVDS)
9	RXOC+	Plus signal of 1st clock channel (LVDS)
10	RXO3-	Minus signal of 1st channel 3 (LVDS)
11	RXO3+	Plus signal of 1st channel 3 (LVDS)
12	RXE0-	Minus signal of 2nd channel 0 (LVDS)
13	RXE0+	Plus signal of 2nd channel 0 (LVDS)
14	GND	Ground
15	RXE1-	Minus signal of 2nd channel 1 (LVDS)
16	RXE1+	Plus signal of 2nd channel 1 (LVDS)
17	GND	Ground
18	RXE2-	Minus signal of 2nd channel 2 (LVDS)
19	RXE2+	Plus signal of 2nd channel 2 (LVDS)
20	RXEC-	Minus signal of 2nd clock channel (LVDS)
21	RXEC+	Plus signal of 2nd clock channel (LVDS)
22	RXE3-	Minus signal of 2nd channel 3 (LVDS)
23	RXE3+	Plus signal of 2nd channel 3 (LVDS)
24	GND	Ground
25	SCL	SCL
26	SDA	SDA
27	PWM_OUT	Reference signal for inverter control
28	VLCD	Power Supply (5.0V)
29	VLCD	Power Supply (5.0V)
30	VLCD	Power Supply (5.0V)

1 3 2 Input Signals

Video Input Signals Range (Analog RGB Signal)

No	Symbol	Item	Min	Max	Uni
1	Fh	Horizontal Frequency	30	83	kH
2	Fv	Vertical Frequency	56	75	H
3	Fclk	Pixel Clock Frequency		148 5	M
4	Vih	High Level Input	2 4		V
5	Vil	Low Level Input	0	0 8	V
6	Video	RGB Analog Video Level	0	0 7	V

1 3 2 1 Video Signal Amplitudes

The video inputs consist of Red, Green and Blue signals each has its own coaxial cable terminated at the monitor. These video signals are analog levels, where 0V corresponds to black, and 700mV is the maximum signal amplitude for the respective color. The video signal is terminated with 75 ohms.

1 3 2 2 Video Signal Termination Impedance

The analog video signal termination shall be 75 ohm.

1 3 2 3 Synchronization (Sync) Signals

The Horizontal Sync (HS) TTL signal is used to initiate the display of a horizontal line. HS may be either active high or active low according to the timing. The Vertical Sync (VS) TTL signal is used to initiate the display of a new frame. VS may be either active high or active low according to the timing.

1 3 2 4 Sync Signal Levels

Level: L = 0V ~ 0 8V H = 2 4V ~ 5V

1 3 2 5 Abnormal Signal Immunity

The monitor shall not be damaged by improper sync timing, pulse duration, absence of sync, abnormal input signal amplitude, or any other anomalous behavior of a graphics card.

1 3 2 6 Digital TMDS Input (DVI signal input)

1 3 3 User Controls and Indicators

Signals used for mode detection:

-Nominal horizontal frequency

-Nominal vertical frequency

-Horizontal sync. Pulse polarity

-Vertical sync. Pulse polarity

The tolerance for detecting the horizontal frequency is between ±1KHz from center frequency

The tolerance for detecting the vertical frequency is between ±0 5Hz from center frequency

1 3 3 1 Power On/Off Switch

The monitor shall have a power control switch visible and accessible on the front of monitor.

1.3.3.2 Power Indicator LED:

The monitor shall have LED indicators located on the front of the monitor. Table 1 is the LED color for the power indicator.

State	LED Light
ON	Blue
Power Saving Mode	Amber

1.3.3.3 On-Screen Display:

On Screen Display system shall be used to control the monitor. Current setting will be saved and OSD will be tuned off when the keys are not touched for a period of time.

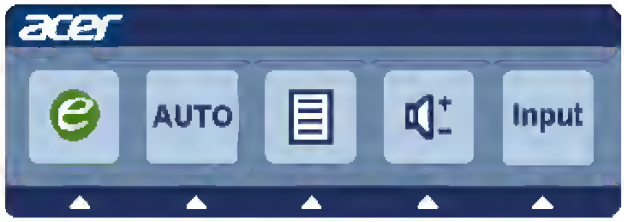
A) Key Function Overview

All functions are controlled by OSD buttons on the front of bezel.

1 Power Switch/ Power LED	To turn ON or OFF the power. Lights up to indicate the power is turned ON.
2 >/(Input)	1) Activate OSD First menu when OSD is OFF. 2) Press > to select the desired function. 3) Press > to change the settings of the current function. 4) When First menu is on, press >(Input) key to change source.
3 </Volume	1) Activate OSD First menu when OSD is OFF. 2) Press <to select the desired function. 3) Press < to change the settings of the current function. 4) When First menu is on, press < (AUDIO) key to select audio.
4 Menu/Enter	1) Activate OSD First menu when OSD is OFF. 2) Activate/de-activate adjustment function when OSD is ON.
5 Auto / Exit	1) Activate OSD First menu when OSD is OFF. 2) When OSD menu is in active status, this button will act as EXIT-KEY (EXIT OSD menu). 3) When exit eColor OSD, it will activate the Auto Adjustment function automatically.
6 Empowering	1) Activate OSD First menu when OSD is OFF. 2) Trigger the acer eColor Management when first menu is active.

B) Menu Operation

Pressing the MENU button brings up the first level menu



C) OSD Function

Acer e-Color Management
Contrast, Brightness, ACM
H-position, V-position
Clock, Focus
OSD position, Timeout
Color Select and adjust (warm, cool, user)
15 Language selected (English, Deutsch, French, Spanish, Italian, Hollands, Finnish,Turkish, Polish, Русский, Portuguese, Japanese, Chinese, Chinese Simplify, Brazilian Portuguese)
Signal Input Select and DDC/CI Control
Display Information
Factory Reset
Exit

D) OSD Control Factory Default Values

eColor mode	Stand rd
Brightness	100
Contrast	50
ACM	Off
Color	Warm
Lan uage	English
OSD H pos	50
OSD V pos	50
OSD Timeout	10s
DDC/CI	On
User R/G/B	50/50/50
Volume	70

1 3 4 Monitor Modes and Timing Capability

1 3 4 1 Format and Timing

The monitor shall synchronize with any vertical frequency from 56 to 75 Hz, and with any horizontal frequency from 30 to 83 KHz

1.3.4.2 Factory Assigned Display Modes

Mode	Resolution			
1		640x480	60	Hz
2	MAC	640x480	66.66	Hz
3	VESA	720x400	70	Hz
4	SVGA	800x600	56	Hz
5	SVGA	800x600	60	Hz
6	XGA	1024x768	60	Hz
7	XGA	1024x768	70	Hz
8	VESA	1152x864	75	Hz
9	SXGA	1280x1024	60	Hz
10	VESA	1280x720	60	Hz
11	WXGA	1280x800	60	Hz
12	WXGA+	1440x900	60	Hz
13	WSXGA+	1680x1050	60	Hz
14	UXGA	1920x1080	60	Hz

1.4 Flat Panel

1.4.1 General Requirements

The panel shall be a FULL HD resolution 23" diagonal TFT-LCD

1.4.2 Polarizer Hardness

The front polarizer should have hard coating (3H) and anti-glare treatment

1.4.3 Backlight Requirements

1.4.3.1 General Requirements

Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
LED String Current	Is	-	100	110	mA	1, 2, 5
LED String Voltage	Vs	46.4	49.6	52.8	V	1, 5
Power Consumption	PBar	-	14.9	15.8	Watt	1, 2, 4
LED Life Time	LED_LT	30,000	-	-	Hrs	3

1.4.4 Defects

1.4.4.1 Defect Terminology

Dark Spots / Lines: Spots or lines that appear dark in the display patterns and are usually the result of contamination. Defects do not vary in size or intensity (contrast) when contrast voltage is varied. Contrast variation can be achieved through the use of varying gray shade patterns.

Bright Spots / Lines: Spots or lines that appears light in the display patterns. Defects do not vary in size or

intensity (contrast) when contrast voltage is varied. Contrast variation can be achieved through the use of varying gray shade patterns.

Polarizer Scratch: When the unit lights, lines appear light (white) with display patterns dark and do not vary in size. Physical damage to the polarizer does not damage the glass.

Polarizer Dent: When the unit lights, spots appear light (white) with display patterns dark and do not vary in size. Physical damage to the polarizer does not damage the glass.

Rubbing Line: Horizontal or diagonal lines that appear gray with the display patterns dark and may have resulted from an "out of control" rubbing process on the polyimide or "waves" on the BEFs or prism sheets.

Newton Ring: The "rainbow" effect caused by non-uniform cell thickness.

Mottling: When the unit lights, variation / non - uniformity (splotch) appears light (white) with the display and might vary in size.

Dim Line: When the unit lights, line(s) in the minor (vertical) or major (horizontal) axis appear dim, but not completely on or off.

Cross Lines Off: When the unit lights , lines in both the minor and major axis do not appear.

Bright/Dark Dot: A sub - pixel (R, G, B dot) stuck off / on (electrical).

1.5 Optical Characteristics.

1.5.1 Brightness uniformity

The brightness uniformity has to be better than 75% and is calculated according to

to the following formula:

$$\triangle Y = \left[\frac{YMIN}{YMAX} \right] \quad X\,100\%$$

With Y1 to Y9 as the brightness values with all pixels white at the 9 measurement

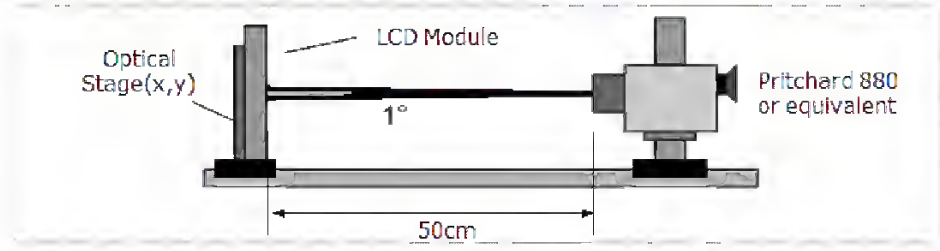
Positions. Contrast and Brightness set to Max.

1.5.2 Contrast ratio (CR)

1.5.2.1 General CR:

The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of Φ and θ equal to 0 °.

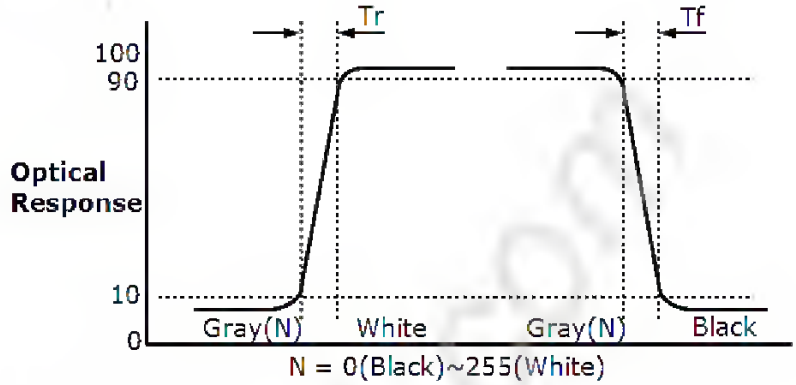
FIG. 7 Optical characteristic measurement equipment and method



Contrast ratio(CR) is defined mathematically as. It is measured at center point(1)

Contrast ratio = Surface luminance with all white pixels / Surface luminance with all black pixels

1.5.3 Response time



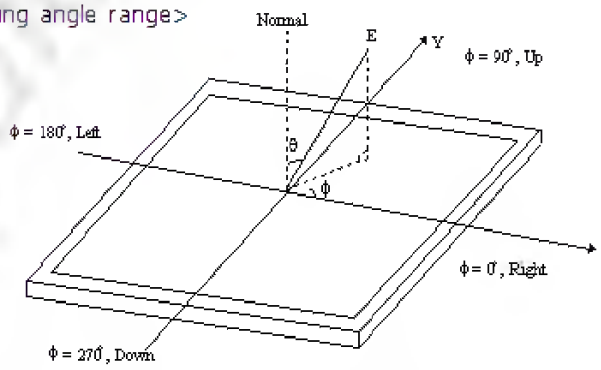
Response time is the time required for the display to transition from black to white (Decay Time, Tr_D) and from white to black (Rise Time, Tr_R)

The sampling rate is 2,500 sample/sec. For additional information see FIG. 9

The response time is defined as the following figure and shall be measured by switching the input signal for each gray to gray.

1.5.4 Viewing angles

<Dimension of viewing angle range>



Viewing angle is the angle at which the contrast ratio is greater than 10 or 5. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG. 8.

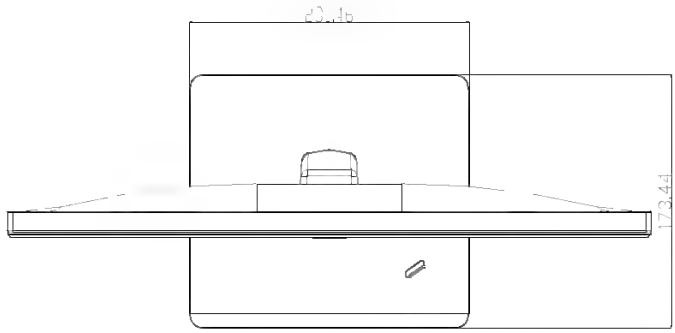
1.6 Environmental Requirements

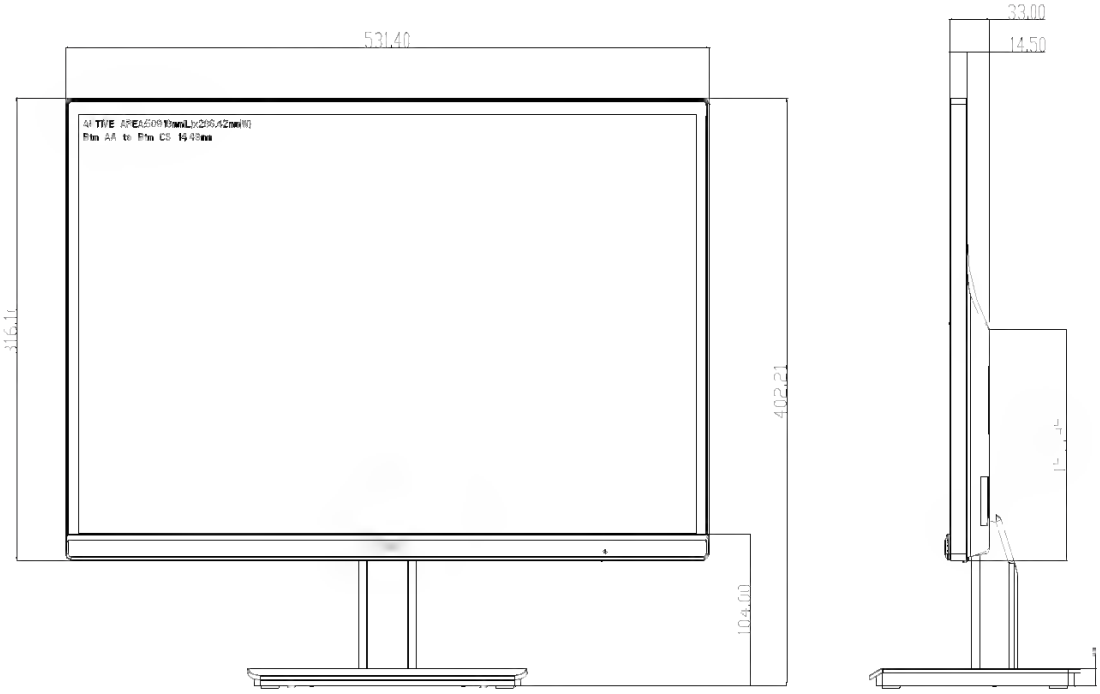
	Operating	Storage
Temperature	0°C - +40°C	-20°C - +60°C
Humidity	15% - 90%	15% - 90%
Altitude	12,000 feet (3,658m)	40,000 feet (12,192m)

1 7 Mechanical and Packing

	Monitor	Packed Monitor
Width	531 40mm	613 mm
Height	402 21mm	118 mm
Depth	173 44mm	413mm
Weight	3 55KG	5 1144 KG

Dimension (mm)





2. OSD Menu

2 1 Key Definition

1 Power Switch/ Power LED	To turn ON or OFF the power. Lights up to indicate the power is turned ON
2 >/(Input)	1) Activate OSD First menu when OSD is OFF 2) Press > to select the desired function 3) Press > to change the settings of the current function 4) When First menu is on, press >(Input) key to change source
3 </Volume	1) Activate OSD First menu when OSD is OFF 2) Press <to select the desired function 3) Press < to change the settings of the current function 4) When First menu is on, press < (AUDIO) key to select audio
4 Menu/Enter	1) Activate OSD First menu when OSD is OFF 2) Activate/de-activate adjustment function when OSD is ON
5 Auto / Exit	1) Activate OSD First menu when OSD is OFF 2) When OSD menu is in active status, this button will act as EXIT-KEY (EXIT OSD menu). 3) When exit eColor OSD, it will activate the Auto Adjustment function automatically.
6 Empowering	1) Activate OSD First menu when OSD is OFF 2) Trigger the acer eColor Management when first menu is active.

2 2 Function Menu

1). Display Function Menu while user press any function button

2). Layout as following figure.

2 3 Main OSD Menu

2 3 1. OSD layout

a. Display OSD menu when user press "MENU" button on front bezel.

b. Layout as following figure

c. OSD layout for each function page

Picture

OSD

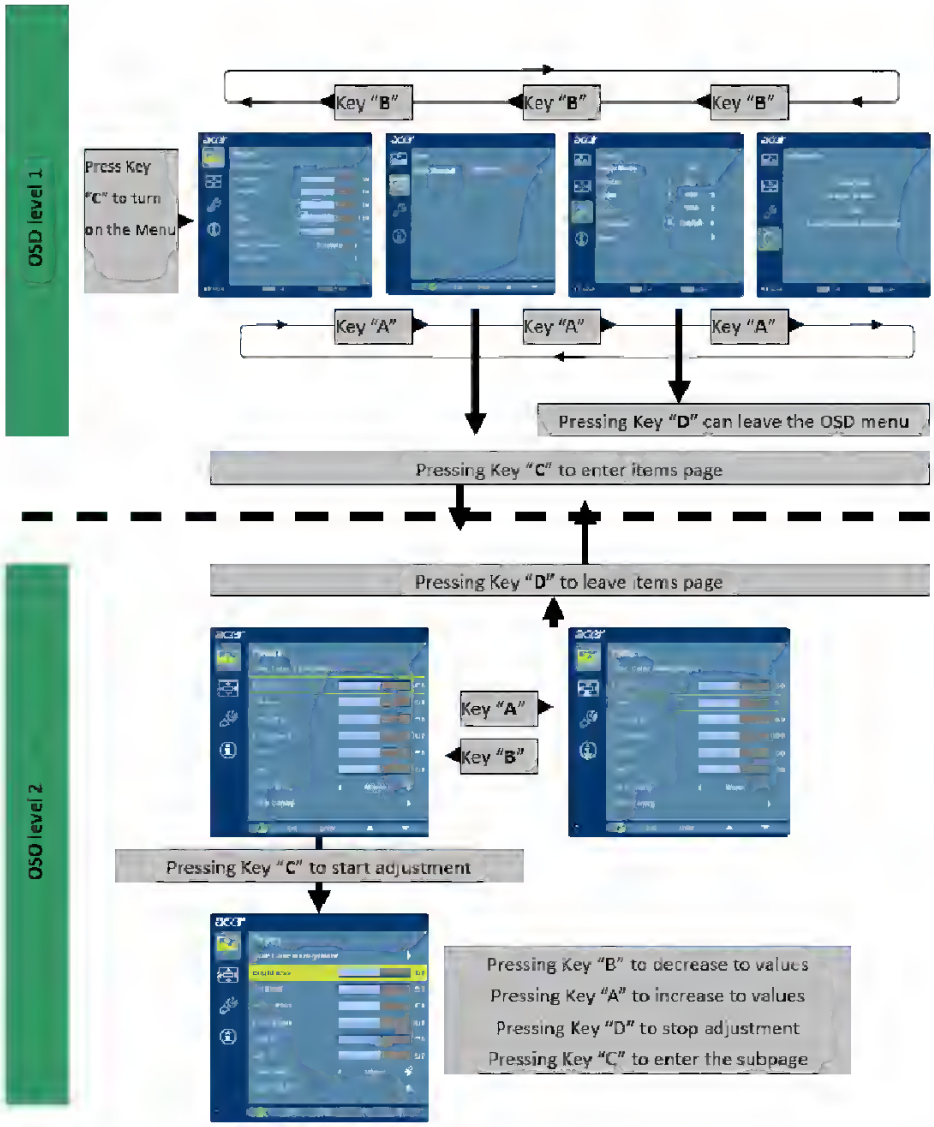
Setting

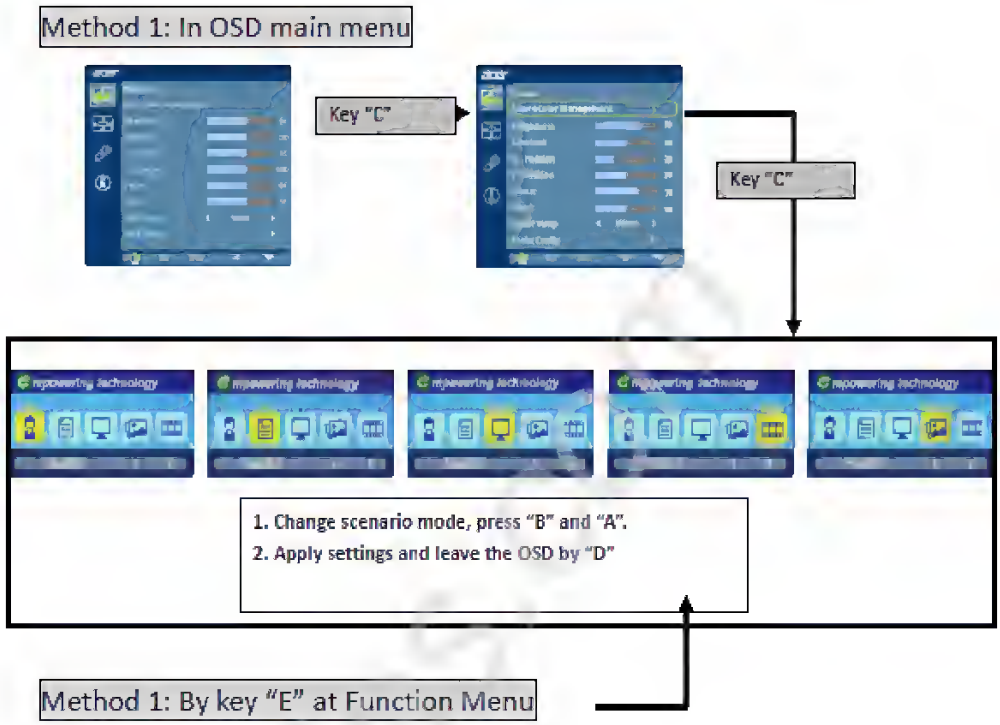
Information

2.3.2 Key operation

Key define

Key	Function description		
Power	Power on/off the monitor	C	Main Menu OSD
A	Input Switch	D	Auto Config
B	Volume Management OSD	E	Trigger the acer eColor Management


OSD level 1
Press Key "C" to turn on the Menu
Key "B"
Key "B"
Key "B"
Key "A"
Key "A"
Key "A"
Pressing Key "D" can leave the OSD menu
Pressing Key "C" to enter items page
Pressing Key "D" to leave items page
OSD level 2
Key "A"
Key "B"
Pressing Key "C" to start adjustment
Pressing Key "B" to decrease to values
Pressing Key "A" to increase to values
Pressing Key "D" to stop adjustment
Pressing Key "C" to enter the subpage


Method 1: In OSD main menu
Key "C"
Key "C"
1. Change scenario mode, press "B" and "A".
2. Apply settings and leave the OSD by "D"
Method 1: By key "E" at Function Menu

2 4 Acer eColor management

a Display Acer eColor Management OSD when user press "e" button at Function menu or trigger this function in OSD menu/picture page.

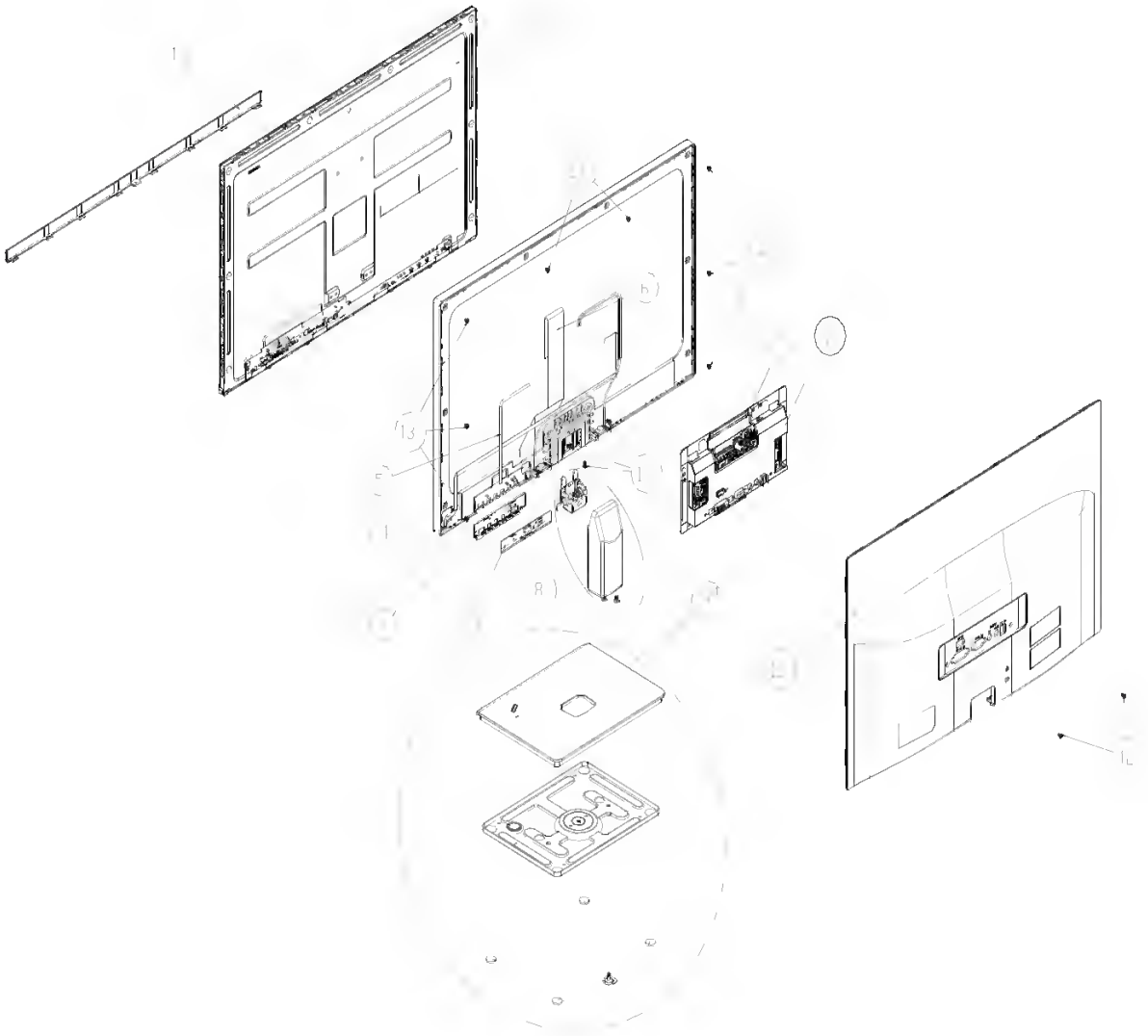
b Layout as following figure

2 5 OSD Message

Item	Description
Auto Config Please Wait	When User Press Hot-Key "Auto", will show this message, and the monitor do the auto config function.
Input Not Supported	When the Hsync Frequency, Vsync Frequency or Resolution is out of the monitor support range, will show this message. This message will be flying.
Cable Not Connected	When the video cable is not connected, will show this message. This message will be flying with orange LED, and mute after about 60Secs.
No Signal	When the video cable is connected, but the is no active signal input, will show this message, then enter power saving.
Please Wait	After user trigger the reset function, system will show this message to notice user the reset is in proceeding

3. Exploded Diagram

3.1 Product Exploded Diagram

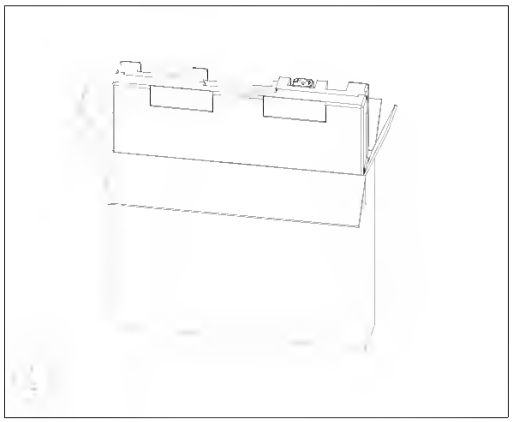


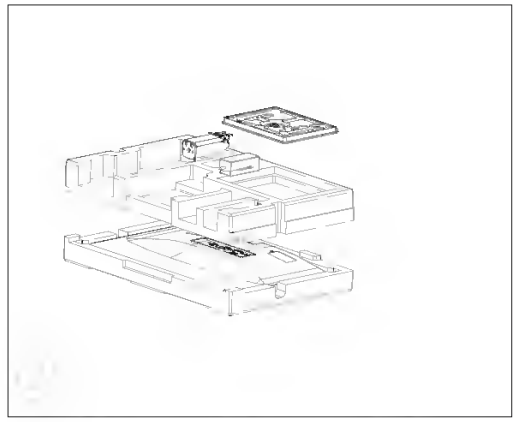
Note The parts information listed below are for reference only, and are subject to change without notice

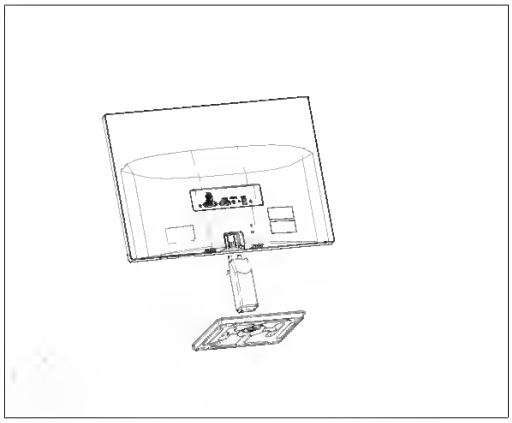
H236HL

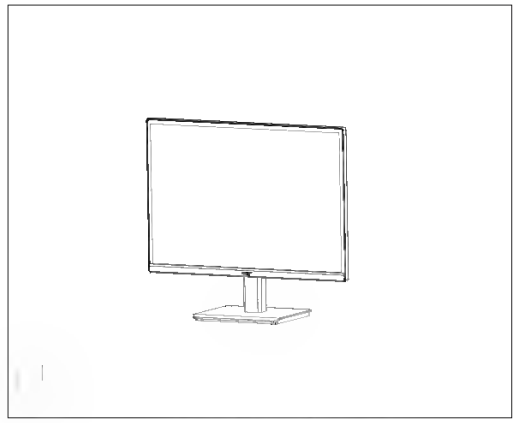
Item	Description	LNT Part No.	Acer Part No.
1	bezel	A34G3021AEM-1B0100	42 LX1M2 001
2	PANEL LM230WF3-S2E2	750GMT230W3E21N100	KL 2300W 002
3	mid-frame ASSEMBLY	705GFACS307	60 LX1M2 005
4	FFC CABLE 10PIN 553MM P0 5MM HONGLIN(main board o backlight)	F95G176H-10358	50 LX1M2 001
5	WIRE HARNESS 6P-6P 200mm XINYA(main board to key board)	F95G8014-6X140	50 LX1M2 003
6	FFC CABLE 30PIN 299MM P1 0MM KOTL(main board to panel)	F95G179J30N259	50 LX1M2 002
7	KEYPAD BOARD	KEPCCQYO	55 LX1M2 002
8	STAND ASSY	705GFACS308	60 LX1M2 002
9	CONVERSION G5757-M0B-000-0040-2-120717	CBPCCT7ABQD	55 LX1M2 001
10	Mainframe	A15G1793201	33 D2GM2 001
11	rearcover	A34G3022AEMA3B0100	60 LX1M2 001
12	SCREW	0M1G3030--6-47-CR3	N/A
13	SCREW	0M1G3030--4-47-CR3	N/A
14	STAND ASSY	705GFACS308	60 LX1M2 002

3.2 Packing Exploded Diagram





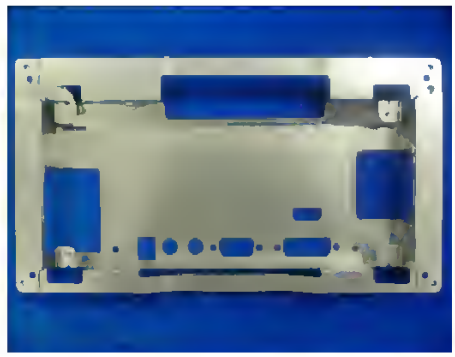
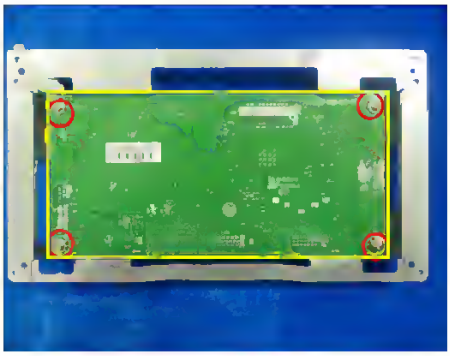
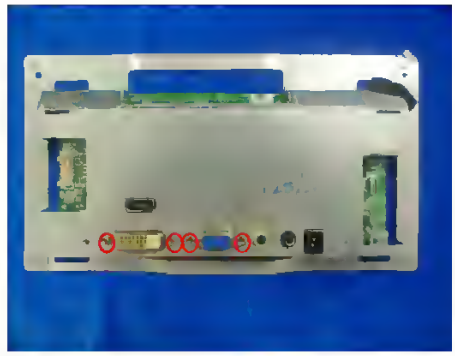




4. Assembly and Disassembly Procedures

4.1 Assembly Procedures

S1 Prepare a main board, a mian frame. Assemble every part as the below picture.

<table>
<tr><td> </td><td>  </td></tr>
<tr><td>① Turn over the main board and Lock screws
  </td><td>②Turn over the main board and lock the four screws
  </td></tr>
</table>

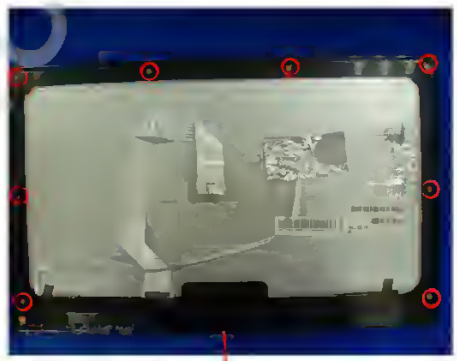
S2 Prepare a bezel, a panel and middle frame assy

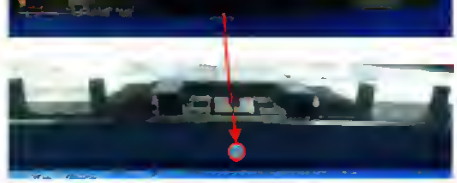
① Assemble the bezel and panel

② Insert the FFC cable lower left the panel, then stick the yellow tape as follow

③ Put the middle frame assy in front of the panel and insert the LVDS cable lower the panel

④ Lock the nine screws in front of the middle frame

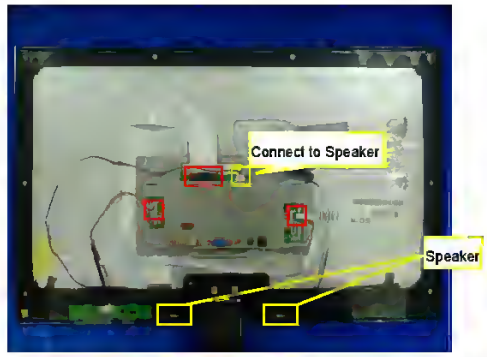




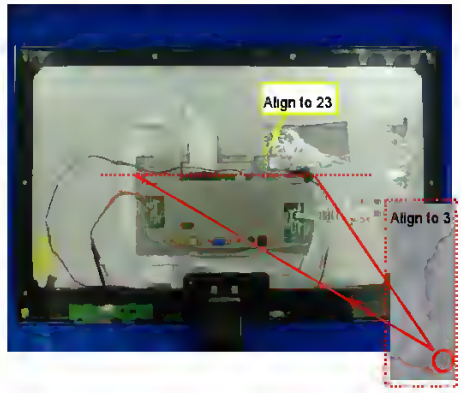
S3 Connect FFC cable and fix Mainboard

① Put the Key board in front of the key and connect the FFC cable

② Connect all kind of cables as follow

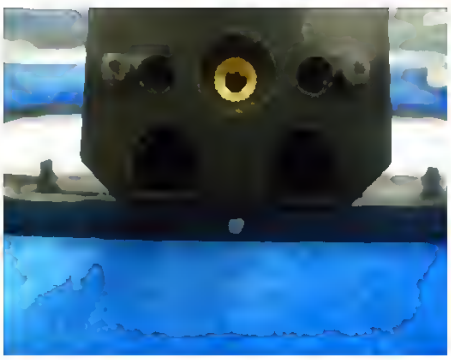
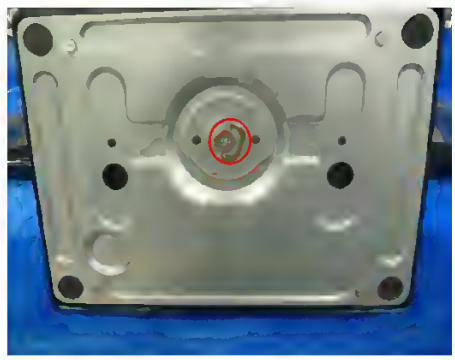


③ Put the mainframe along the mark



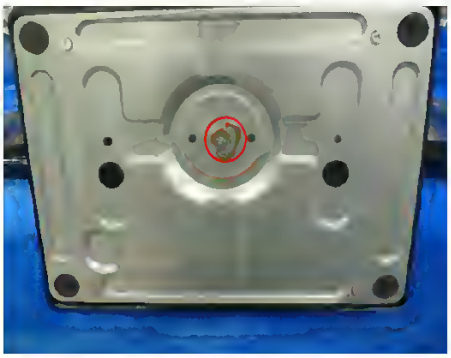
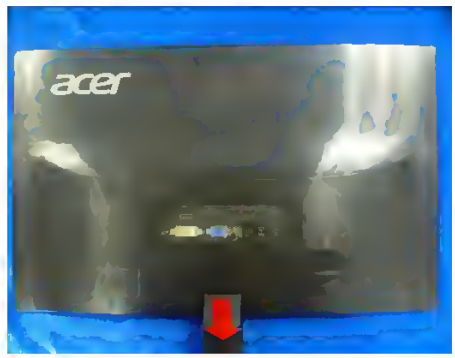
S4 Assemble rear cover and lock the two screws

S5 Prepare a Stand, a Hinge and a Base

① Put the hinge into the slot 	Base assy
	Assemble the stand ass'y and the base 

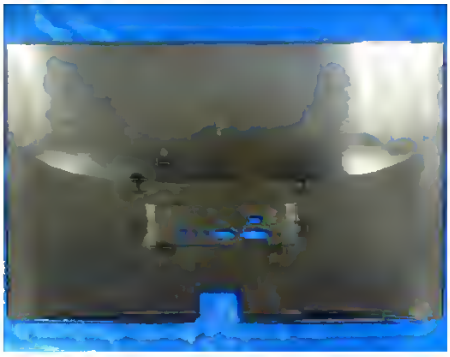
4.2 Disassembly procedures

S1 Put the monitor on a protective cushion

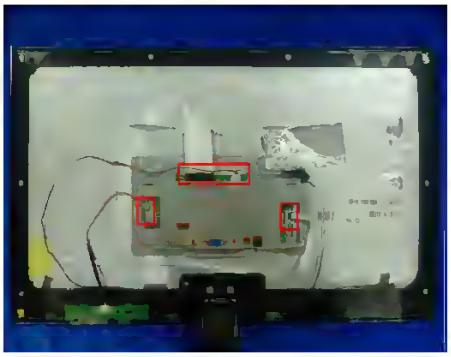
① Unscrew the screw as the below picture	② Pull out the stand ass'y
	

S2 Unscrew the two screws and then open all latches with tool

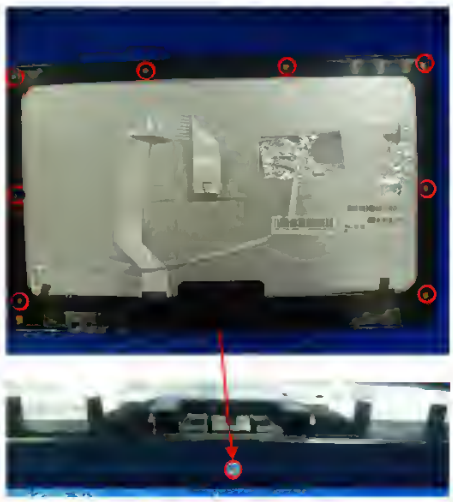
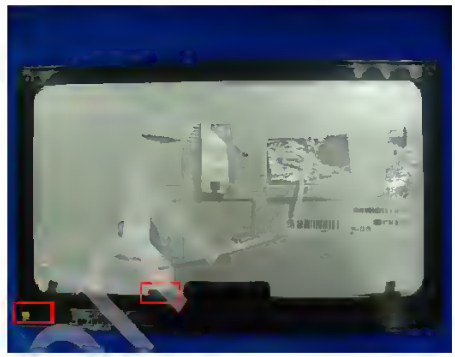
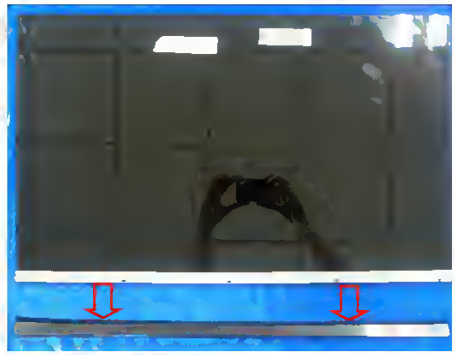
S3 Remove the rear cover

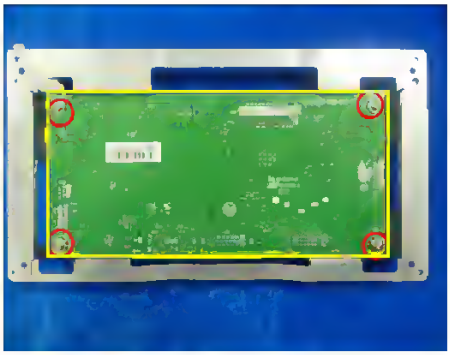
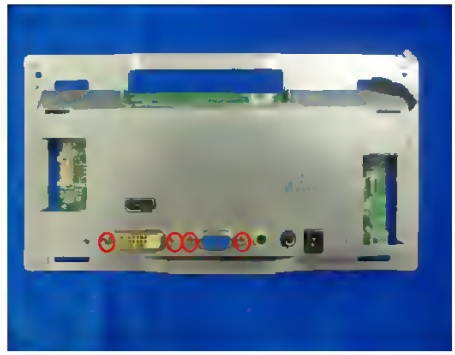
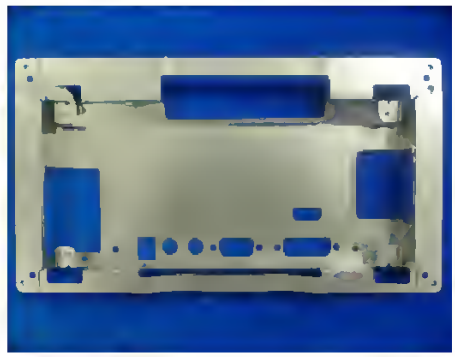
S4 Tear out all tapes on the main frame,and romove the main frame,key board and the speaker



S5 Remove out the panel、bezel、middle frame

①Uscrew the nine screws in front of the middle frame	② Disconnect two cables
	
	

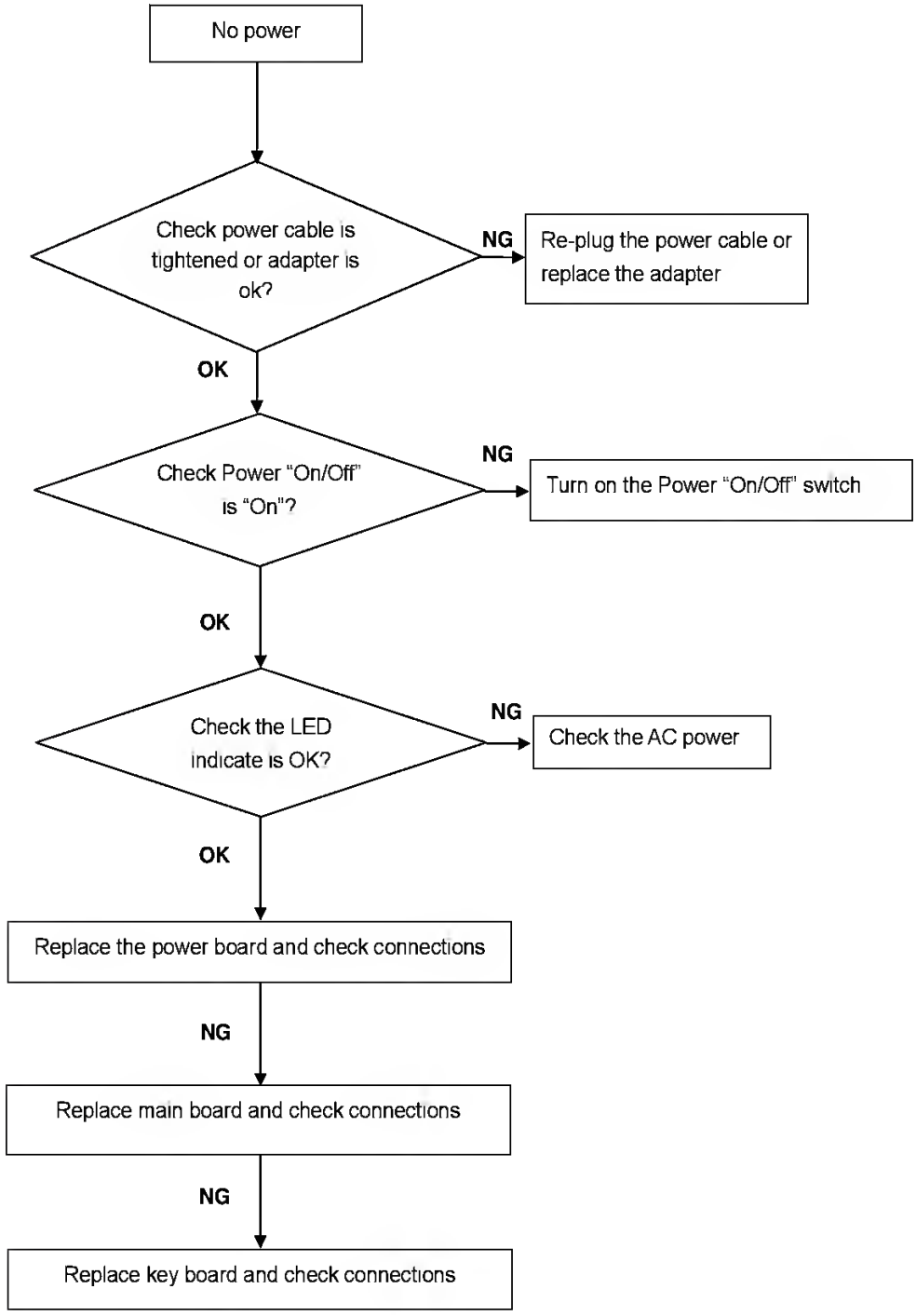
S6 Separate the main board and I/O Bracket.

① Turn over the main board and unscrew the four screws.	②Turn over the main board and unscrew the two screws.
	
	

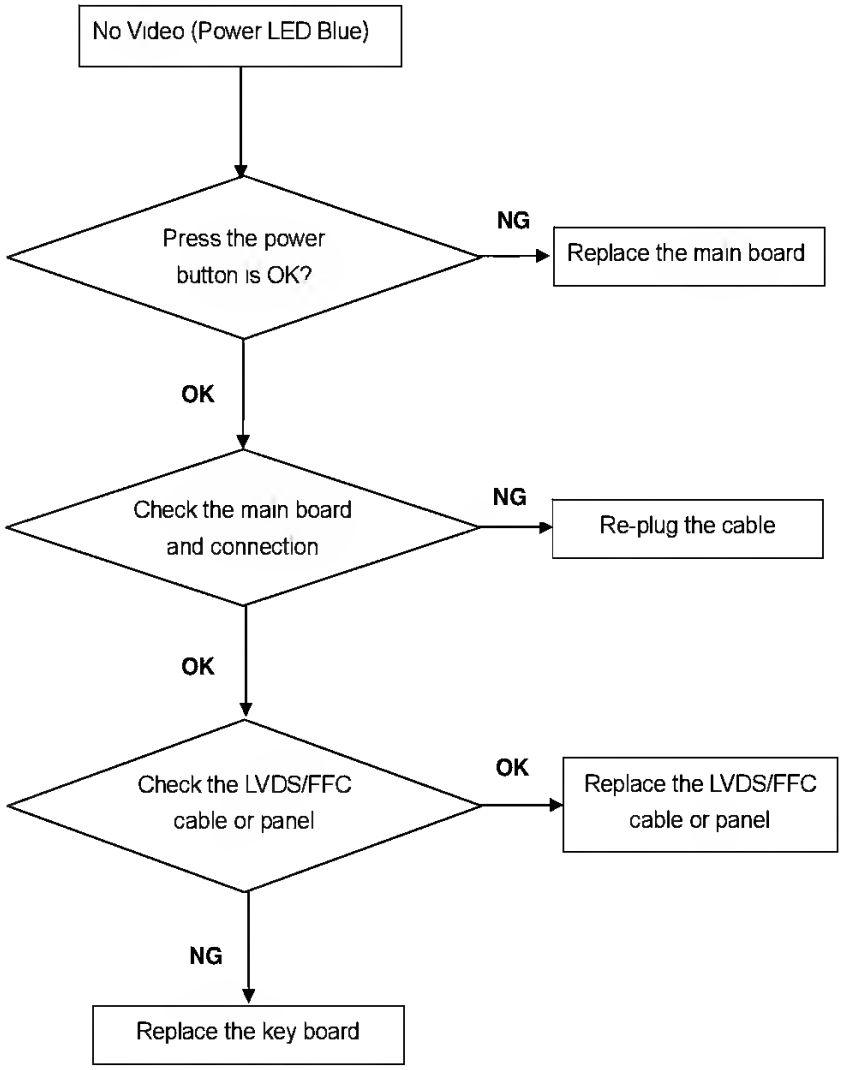
NOTE: Circuit boards >10 cm² has been highlighted with the yellow rectangle as above image shows. Please detach the Circuit boards and follow local regulations for disposal

5. Troubleshooting

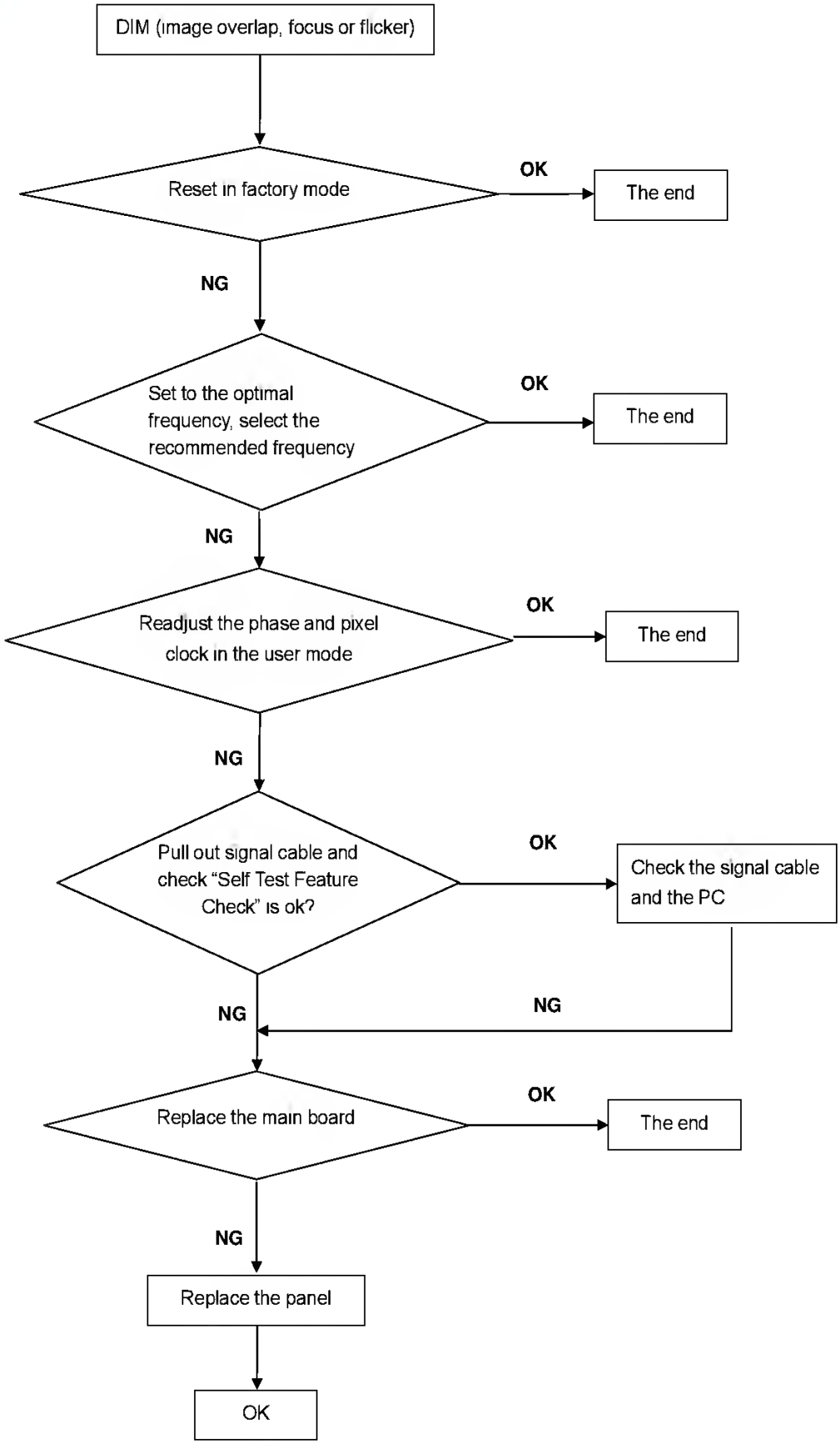
1 No Power



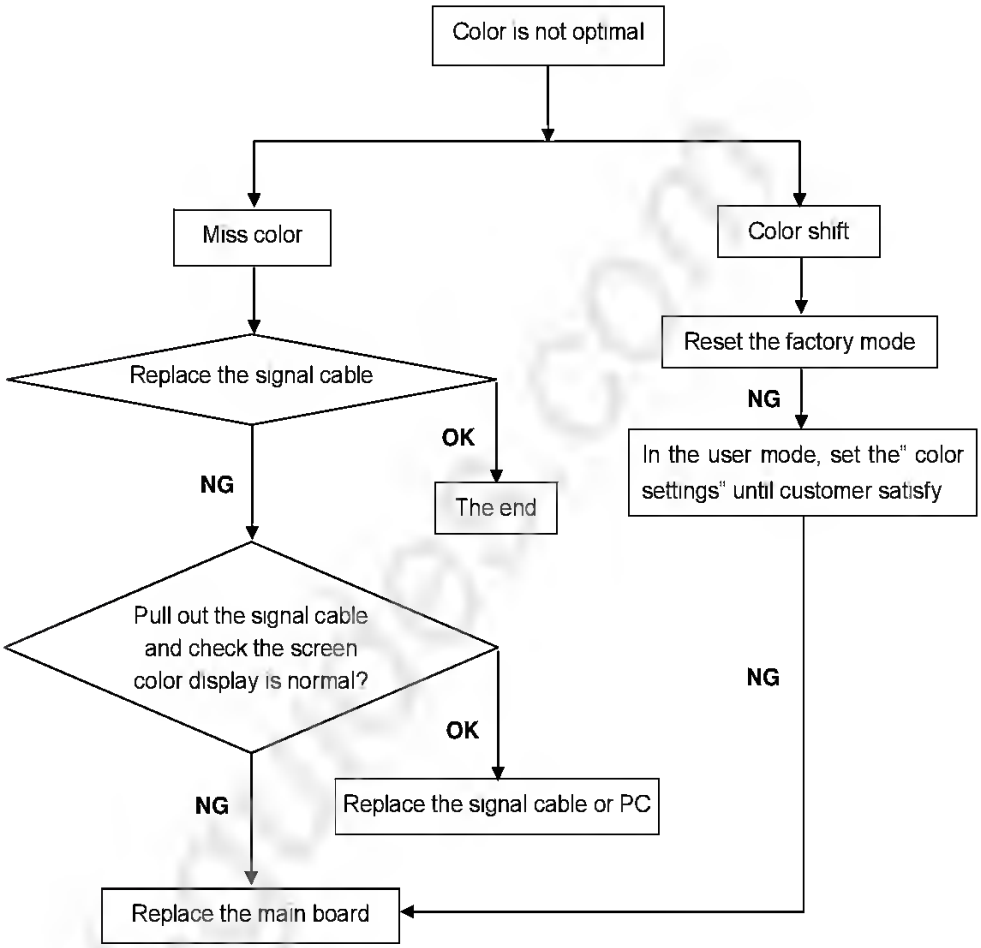
2. No Video (Power LED Blue)



3 DIM


DIM (image overlap, focus or flicker)
Reset in factory mode
OK
The end
NG
Set to the optimal frequency, select the recommended frequency
OK
The end
NG
Readjust the phase and pixel clock in the user mode
OK
The end
NG
Pull out signal cable and check "Self Test Feature Check" is ok?
OK
Check the signal cable and the PC
NG
NG
Replace the main board
OK
The end
NG
Replace the panel
OK

4. Color is not optimal



6. Firmware Upgrade Process

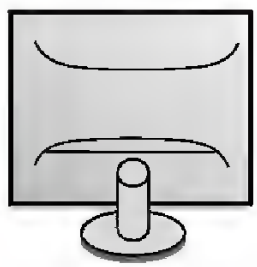
The SOP as below apply to the model H236HL

6.1 Materials list

ISP JIG: 715GT089-B/C

VGA cable
TPV P/N: 089G728 GAA DB

PC



Monitor

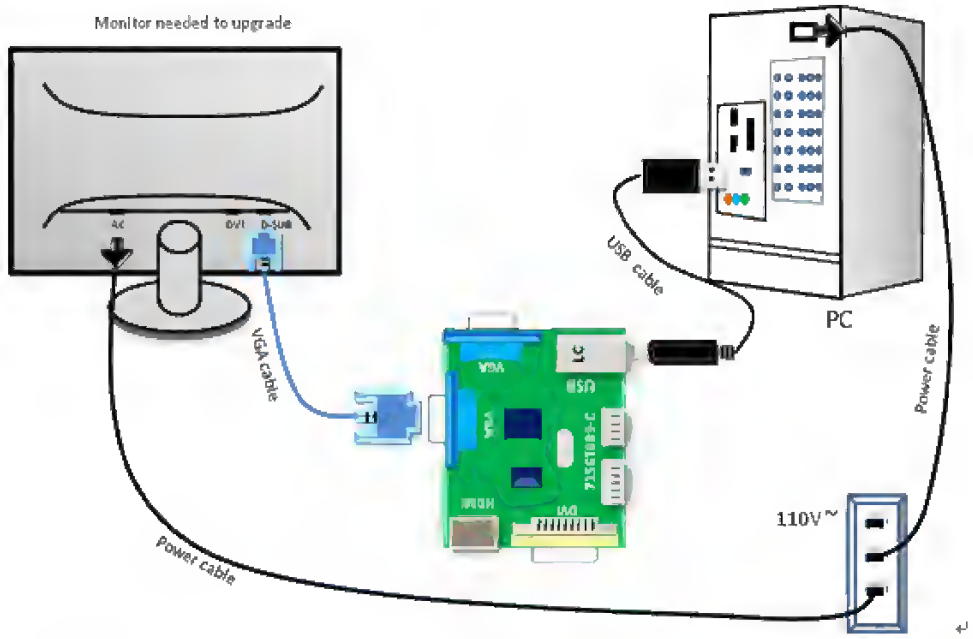
USB cable
TPV P/N: 089G1758 X

FTC100103(MSTAR) usb drive.rar
USB port driver

RTD Customer Tool
ISP tool: V1.7 Beta2

ACER_H236HL_RTD2483D_BM230WF5_HEV_120906_V003
New F/W

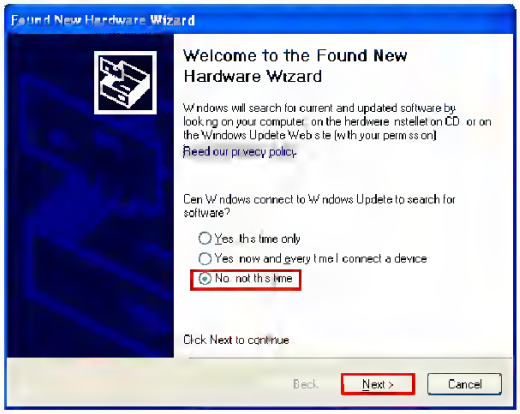
6 2 Connection

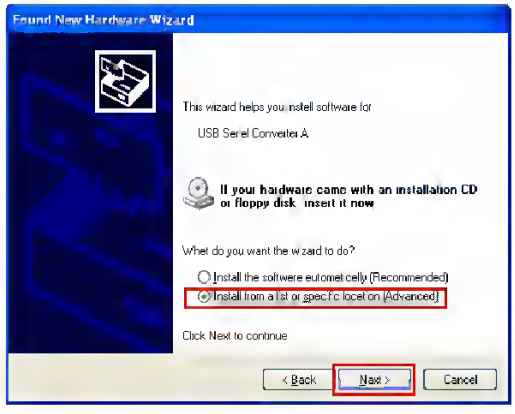


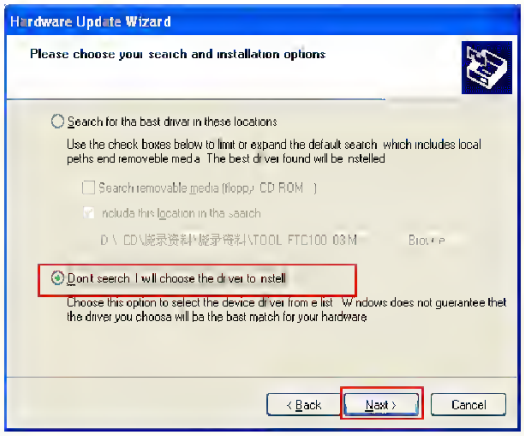
6 3 Install USB driver

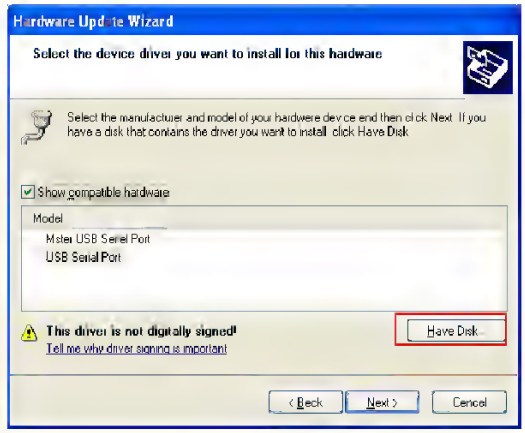
6 3 1 When insert the USB cable to PC USB port, will pop up a Hardware Wizard to help you install the USB driver if you use this ISP board first time. You can install it successfully as the below instruction step by step.

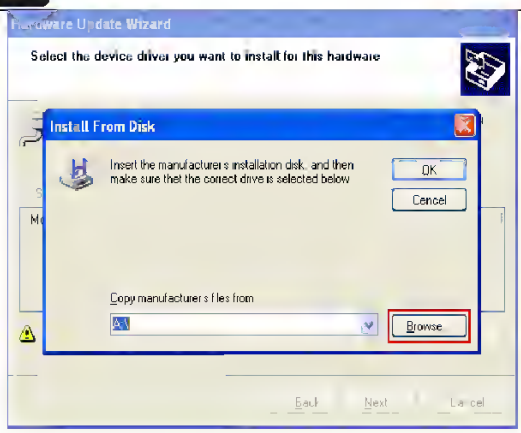
Remark: The USB driver files path: D:\FTC100103(Mstar)\FTCUSB.INF

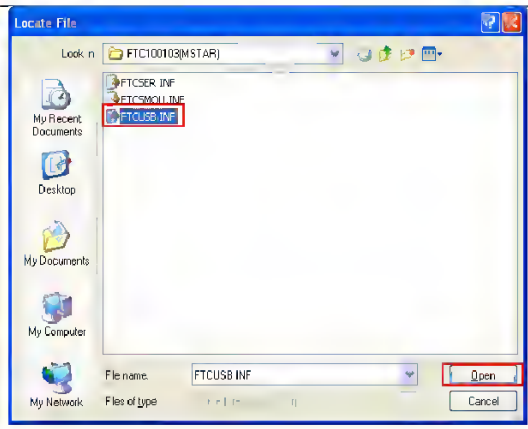

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue
Back
Next >
Cancel

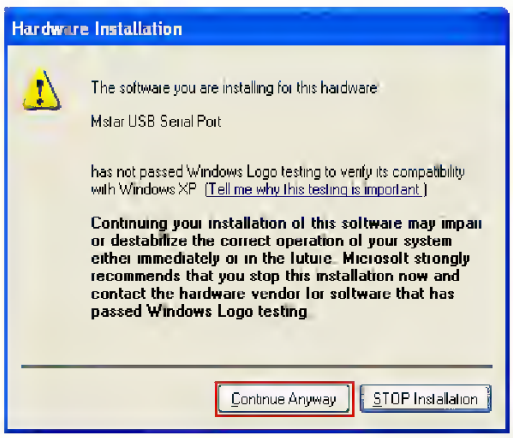

Found New Hardware Wizard
This wizard helps you install software for:
USB Serial Converter A
If you have hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue
< Back
Next >
Cancel


Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel


Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
Mstar USB Serial Port
USB Serial Port
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel






Hardware Installation
The software you are installing for this hardware:
Mstar USB Serial Port
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

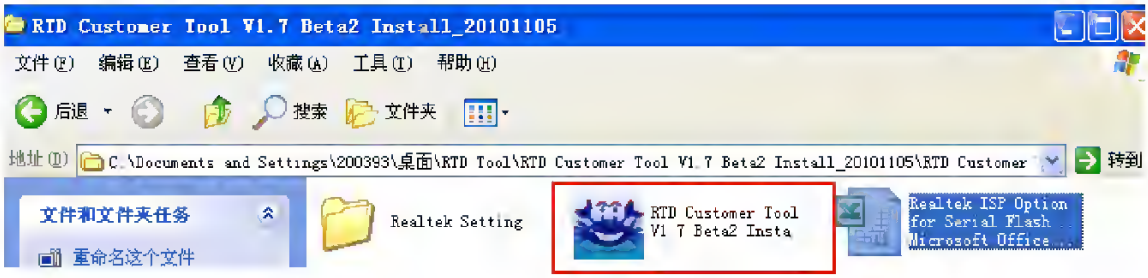
Hardware Update Wizard
Please wait while the wizard installs the software...
Mstar USB Serial Port
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
Back
Next
Cancel

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Mstar USB Debug Tool A
Click Finish to close the wizard.
Back
Finish
Cancel

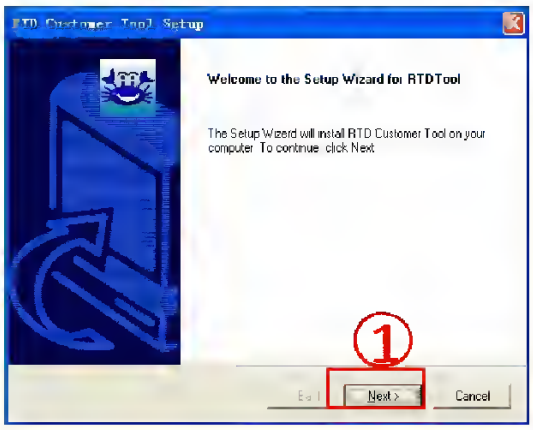
Click “Finish” to complete the USB serial port driver installation.

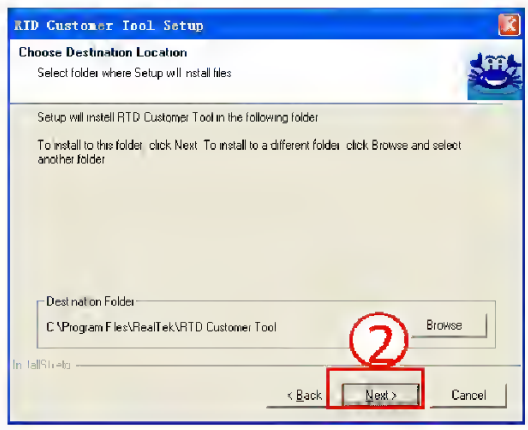
6 4 Install the ISP tool

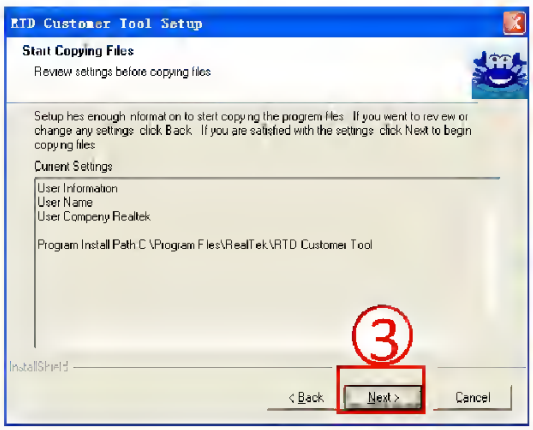
6 4 1 Copy ISP tool in one folder

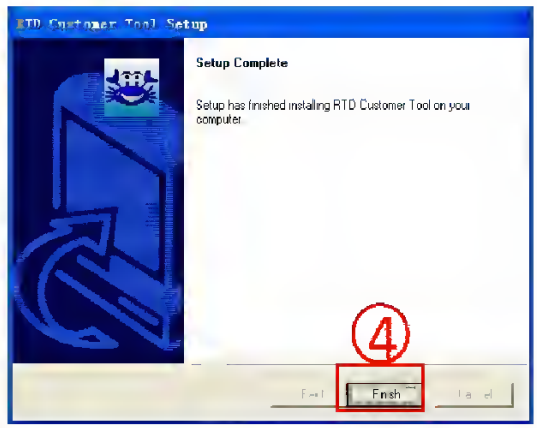

RTD Customer Tool V1.7 Beta2 Install_20101105
文件(F) 编辑(E) 查看(V) 收藏(A) 工具(T) 帮助(H)
后退 搜索 文件夹
地址(D) C:\Documents and Settings\200393\桌面\RTD Tool\RTD Customer Tool V1.7 Beta2 Install_20101105\RTD Customer
转到
文件和文件夹任务
重命名这个文件
Realtek Setting
RTD Customer Tool V1 7 Beta2 Insta
Realtek ISP Option for Serial Flash
Microsoft Office

6 4 2 Double-click to install the ISP tool

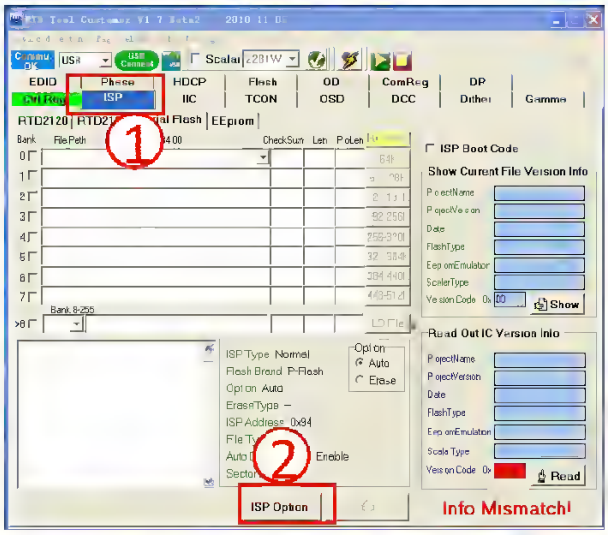

RTD Customer Tool Setup
Welcome to the Setup Wizard for RTDTool
The Setup Wizard will install RTD Customer Tool on your computer. To continue, click Next.
Next >
Cancel
1

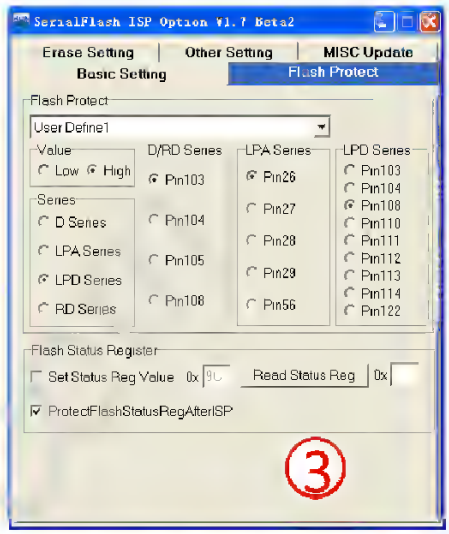

RTD Customer Tool Setup
Choose Destination Location
Select folder where Setup will install files.
Setup will install RTD Customer Tool in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\RealTek\RTD Customer Tool
Browse
InstallShield
< Back
Next >
Cancel
2

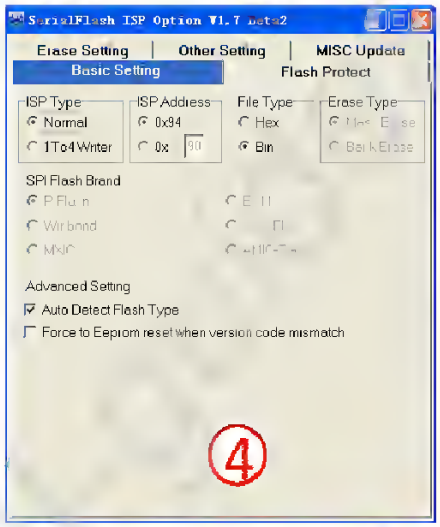

RTD Customer Tool Setup
Start Copying Files
Review settings before copying files.
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
User Information:
User Name:
User Company: Realtek
Program Install Path: C:\Program Files\RealTek\RTD Customer Tool
InstallShield
< Back
Next >
Cancel
3

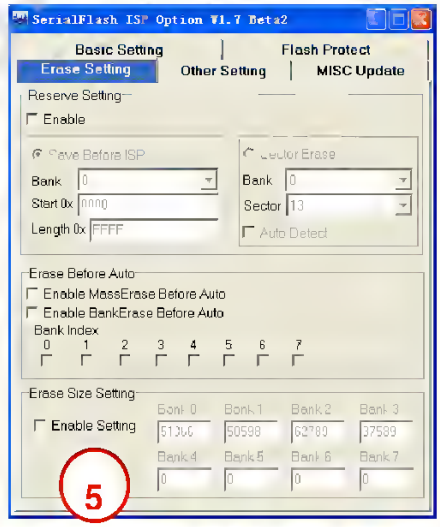


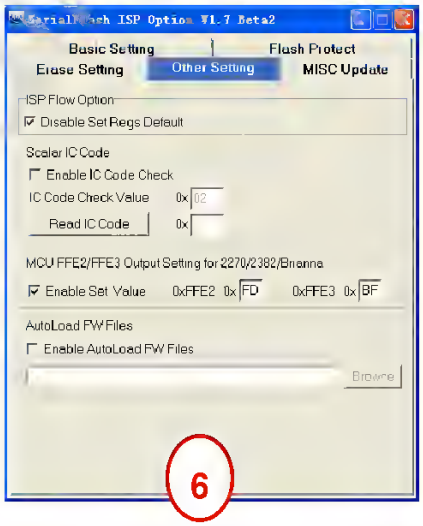
6 4 3 Double-click to run the ISP tool and complete as the following steps

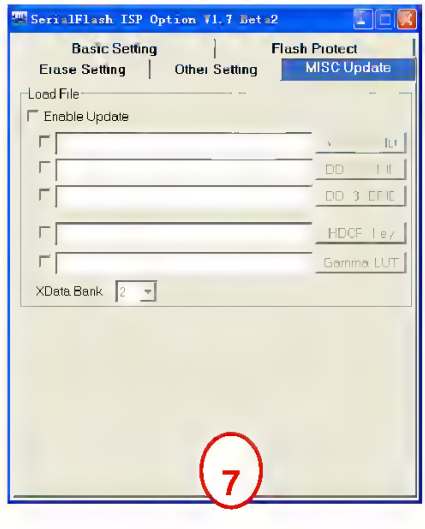




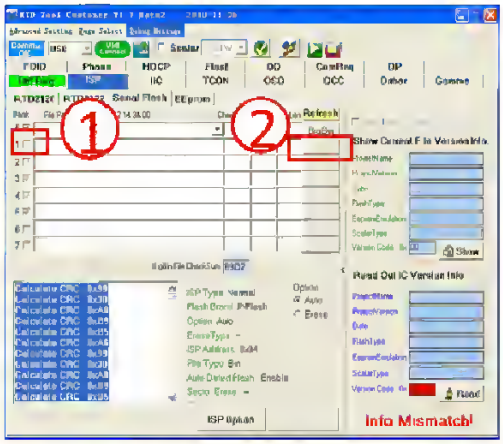


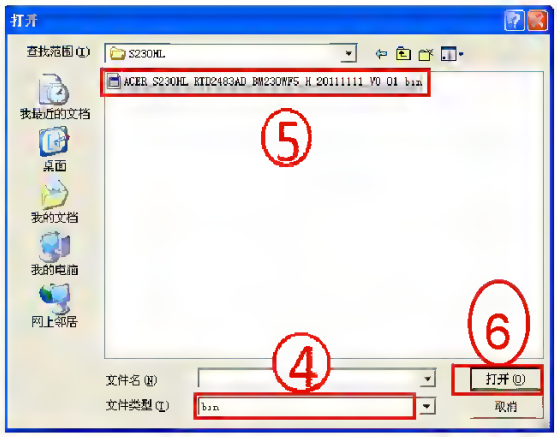


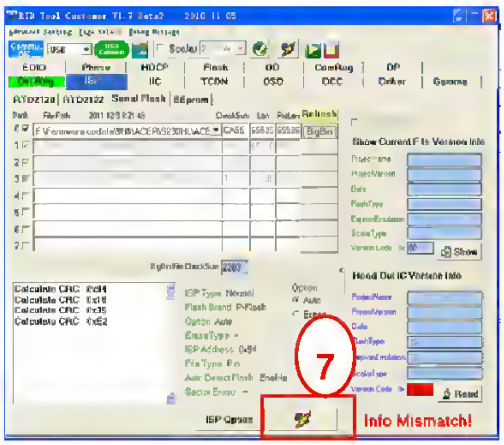


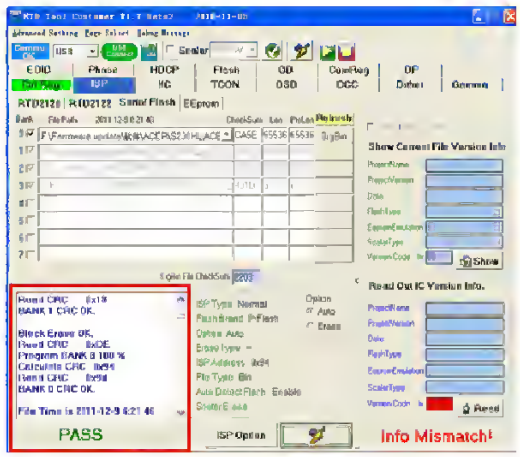


6.4.5 Load the F/W you want to upgrade









6 5 Check the firmware version

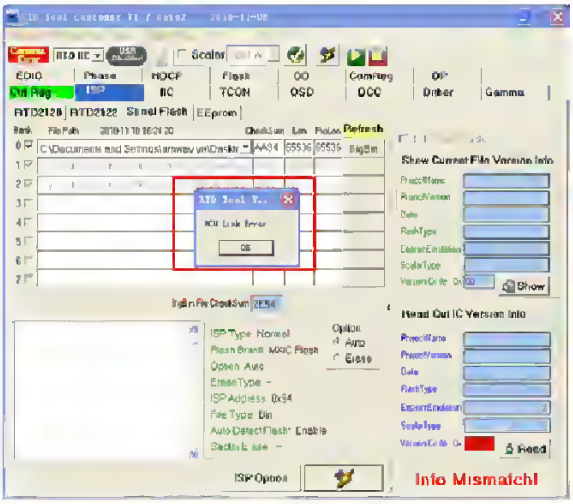
S1 Connect VGA source to monitor and turn it on

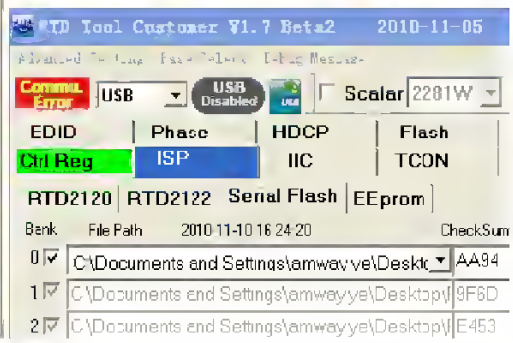
S2 Pressing “e” and power on, when the screen lights, release the key and press “MENU” again to open the menu with "F" and select "F" to open factory menu

S3. Restart the monitor. And then open the user menu. Factory reset will turn off Burn in mode.

6 .6 Troubleshooting

6 6 1 Can't Entry ISP Modell





(1) Check the cables and ISP JIG are connected fluently

(2) Click the usb driver installed correct

(3) AC off the monitor for a while and retry it

(4) Change ISP JIG or cable

(5) Change PC

7. Writing EDID Process

The SOP as below apply to the model H236HL Analog+DVI+HDMI

7.1 Test Environment Preparation:

Hardware and Software Required:

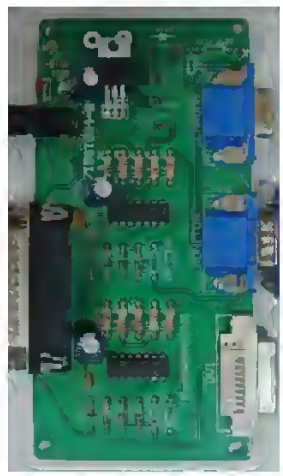
- LPT cable(male to male)
- VGA cable
-12V DC adapter
- ISP Board: 715GT034-B
- PC
- Monitor
- LPT port driver
- ISP tool: TPVDDC20100901.exe
- EDID

LPT cable(male to male)

VGA cable

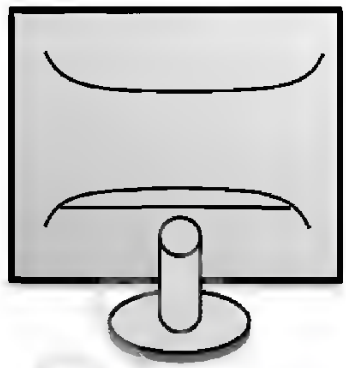
12V DC adapter

ISP Board: 715GT034-B

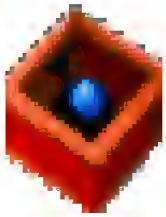


PC

Monitor



LPT port driver



PORT95NT.EXE

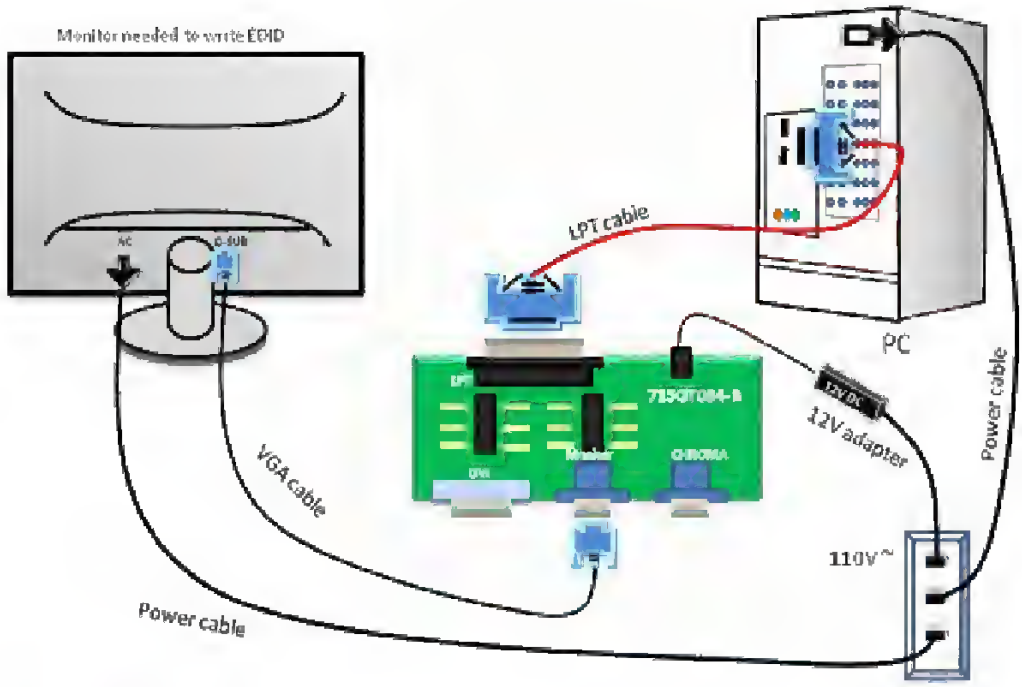
ISP tool TPVDDC20100901 exe

TPVDDC20100901.exe

EDID

H236HL

7.2 Connection:



7.3 Writing VGA and HDMI Process

S1 Double-click PORT95NT.EXE PackageForTheWeb Stub InstallShield Software Corpora to install it. And restart PC after installation.

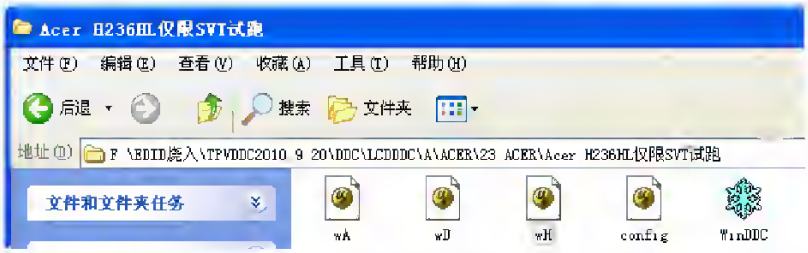
S2. Prepare the EDID written. Change the EDID files name as below rule.

Anolog EDID ⟶ wA.dat

DVI EDID ⟶ wD.dat

HDMI2 EDID⟶ wH.dat

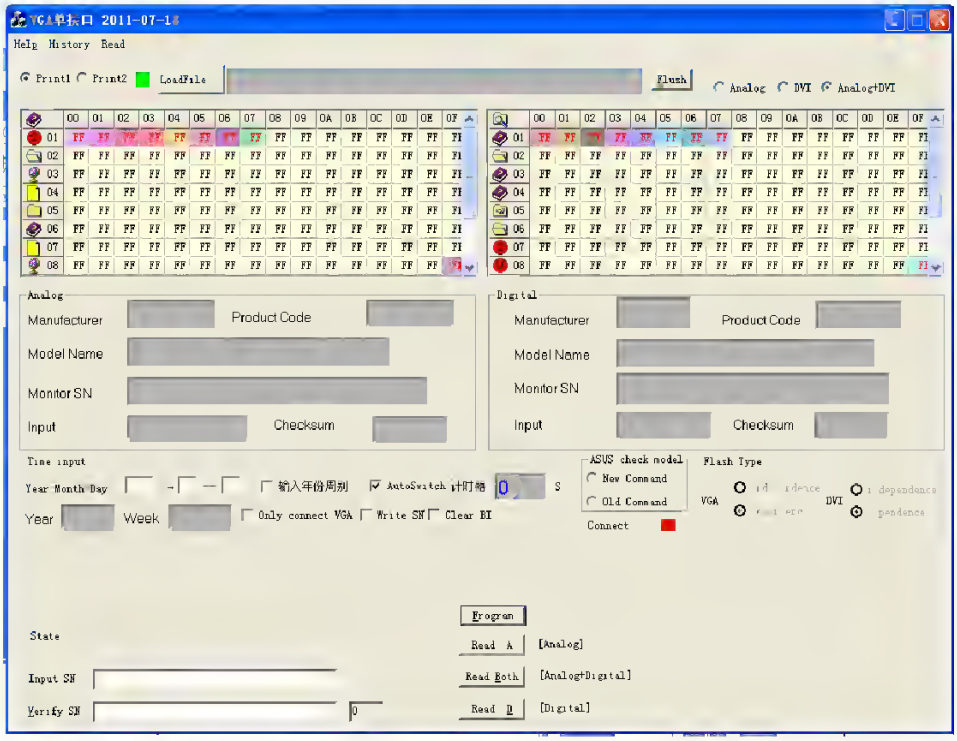
S3. Copy WA.dat to one folder named as ACER S230WL which must contains "config.ini" file.



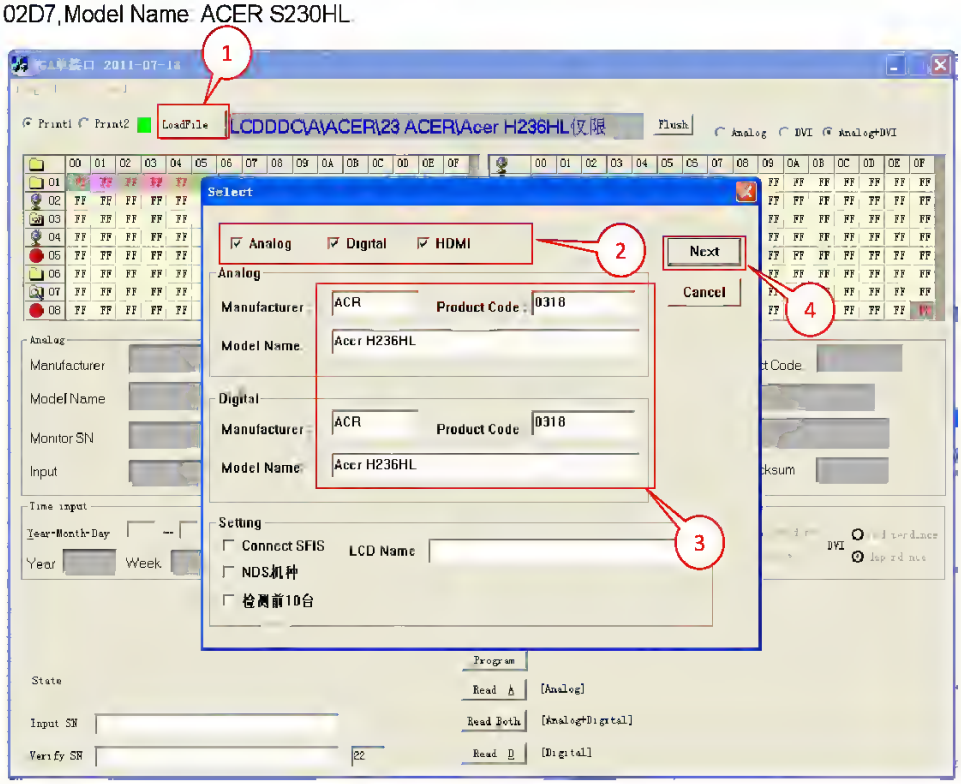
S4. Copy ACER S230WL to DDC folder and put DDC and ISP tool together.

S5. Double-click

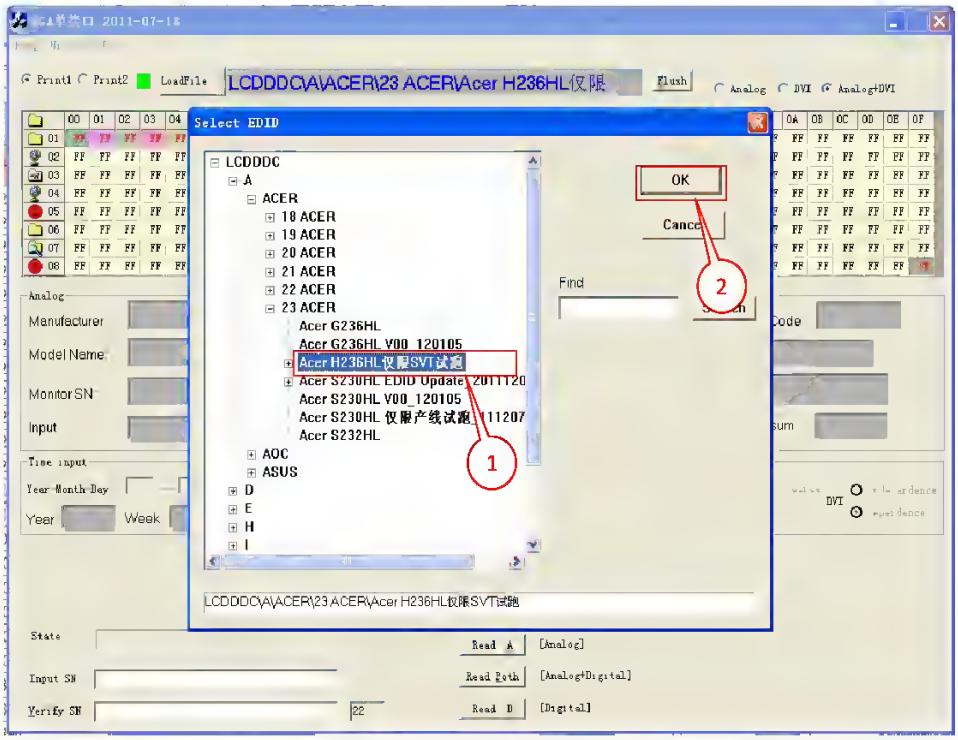
the icon to open the tool



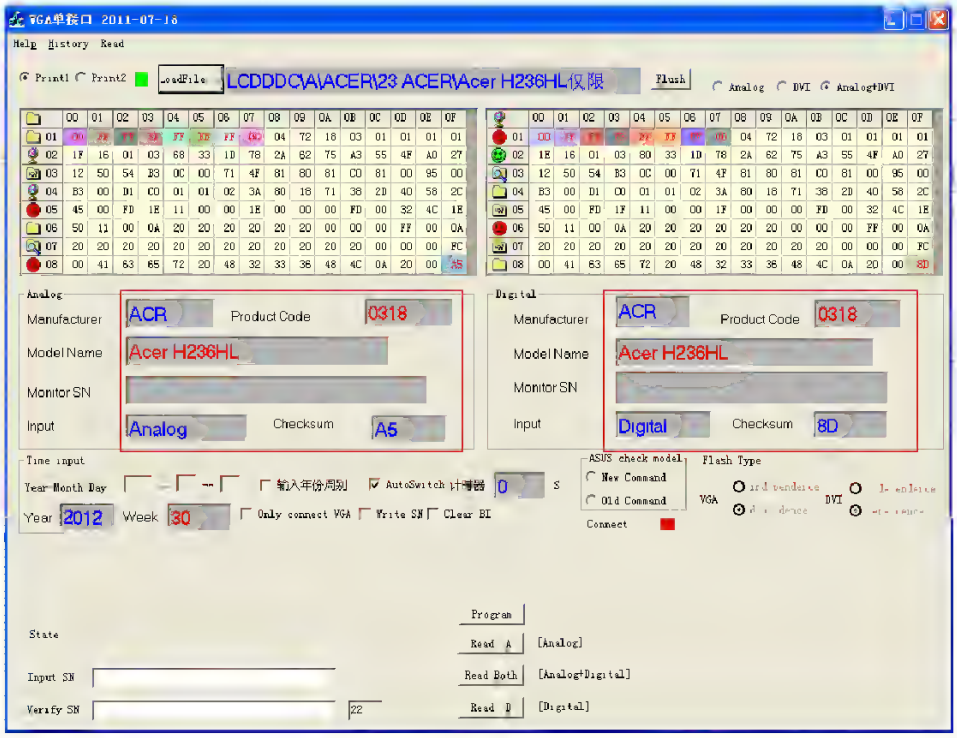
S6. Click "Loadfile" to set the parameters. Click "Analog", "HDMI1" and "HDMI2", Manufacturer: ACR, Product Code: 02D7, Model Name: ACER S230HL.



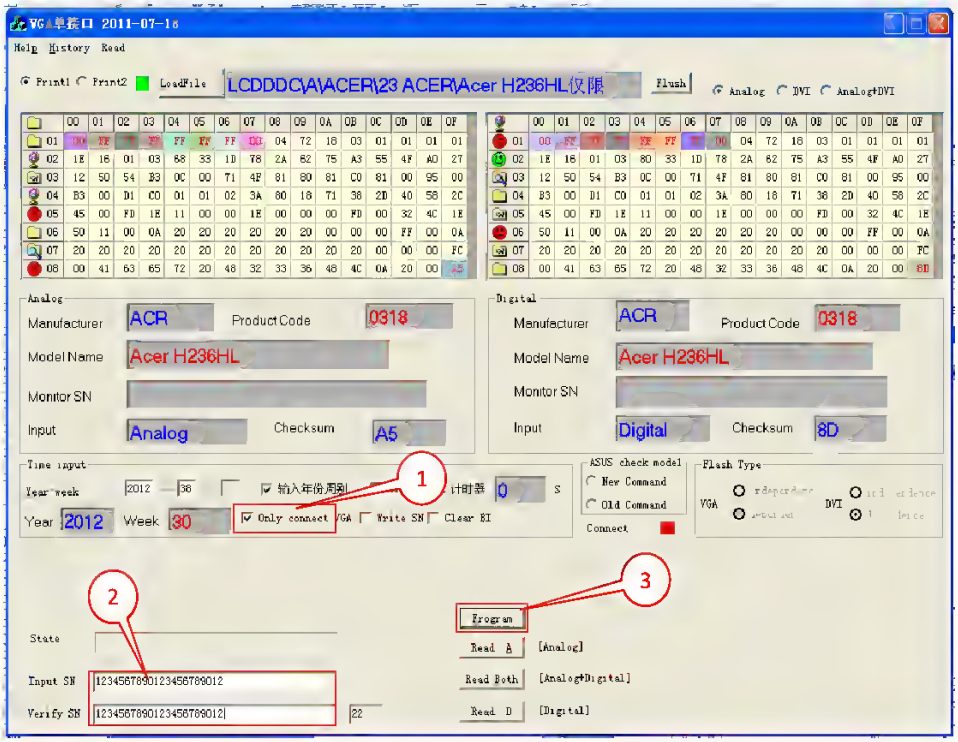
S7 Select the EDID folder as the below picture



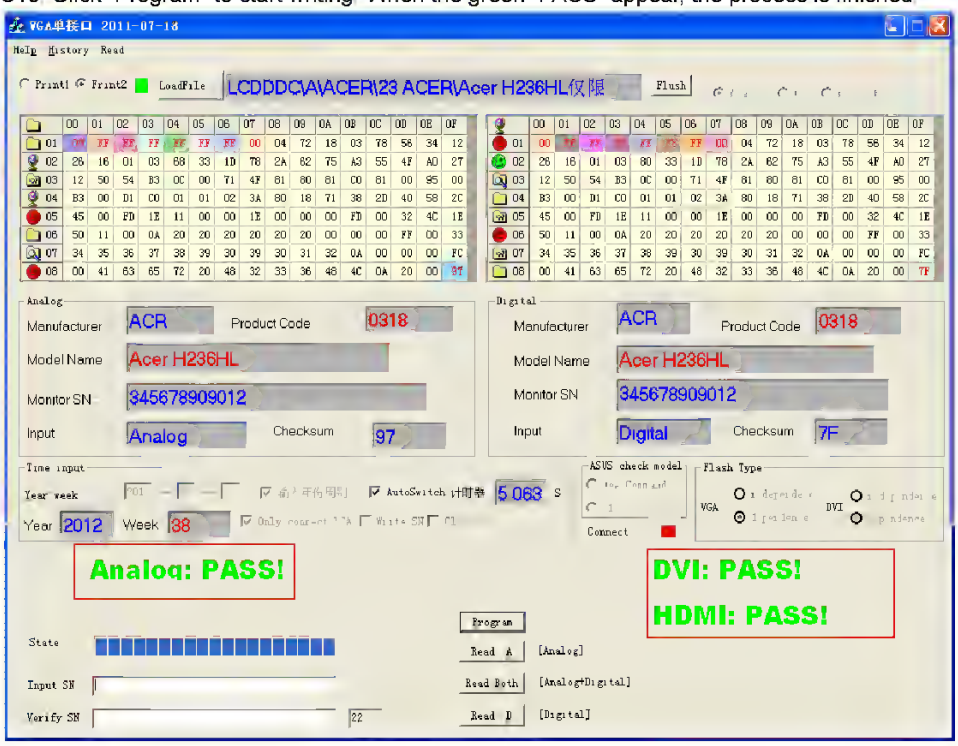
S8 Load EDID successful



S9. Check the Only connect HDMI" and "Write SN", and type in the 22 digit S/N which must be the same as S/N in the monitor's barcode



S10. Click "Program" to start writing. When the green "PASS" appear, the process is finished.



7 4 Check the S/N

S1. Press "MENU" key —" "— "Information"—"SN" in user mode.

7 5 Q&A

S1. If can't write! You could try to restart the monitor (AC on the monitor and turn on it).

S2. If can't write! Take apart the monitor and connect the 7pin of EEPROM to GND to diable write protection then write EDID one by one.

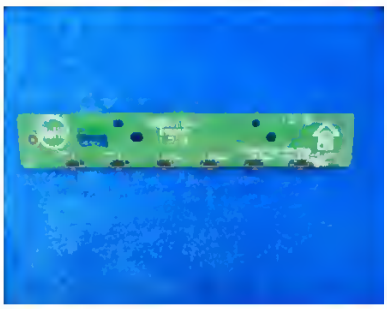
S3. If can't write! Set the Burn in on last to try again.

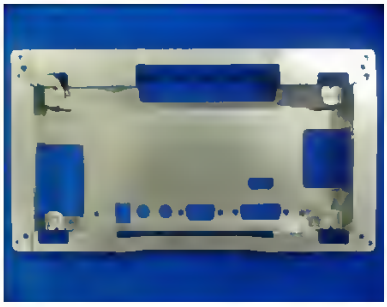
8. FRU (Field Replaceable Unit) List

This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of Acer H236HL. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

Please note that WHEN ORDERING FRU PARTS, you should check the most up-to-date information available on your regional web or channel. For whatever reasons a part number change is made, it will not be noted on the printed Service Guide. For ACER AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code from those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

NOTE: To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how to dispose it properly, or follow the rules set by your regional Acer office on how to return it.

Picture	Description	LNT Part No.	Acer Part No.
	bezel	A34G3021AEM-1B0100	42.LX1M2.001
	PANEL LM230WF3-S2E2	750GMT230W3E21N100	KL.2300W.002
	mid-frame ASSEMBLY	705GFACS307	60.LX1M2.005
	KEYPAD BOARD	KEPCCQYO	55.LX1M2.002

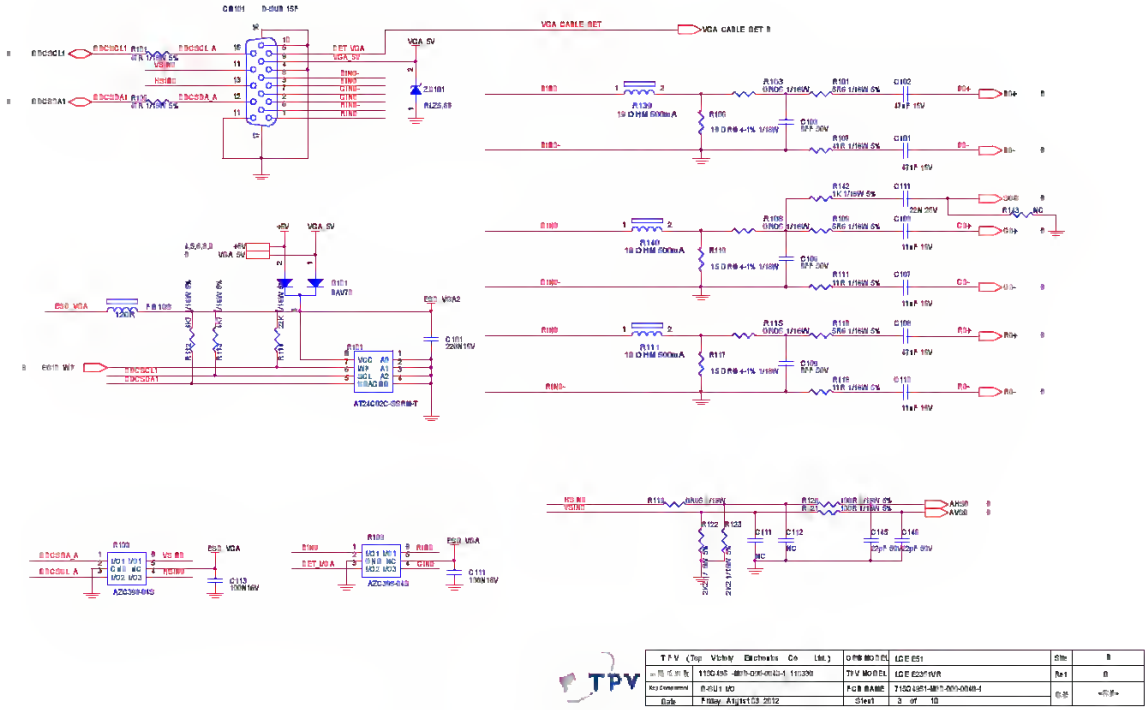
	STAND ASSY	705GFACS308	60 LX1M2 002
	CONVERSION G5757-M0B-000-0040-2-120717	CBPCCT7ABQD	55 LX1M2 001
	Mainframe	A15G1793201	33 D2GM2 001
	rearcover	A34G3022AEMA3B0100	60 LX1M2 001
	STAND ASSY	705GFACS308	60 LX1M2 002

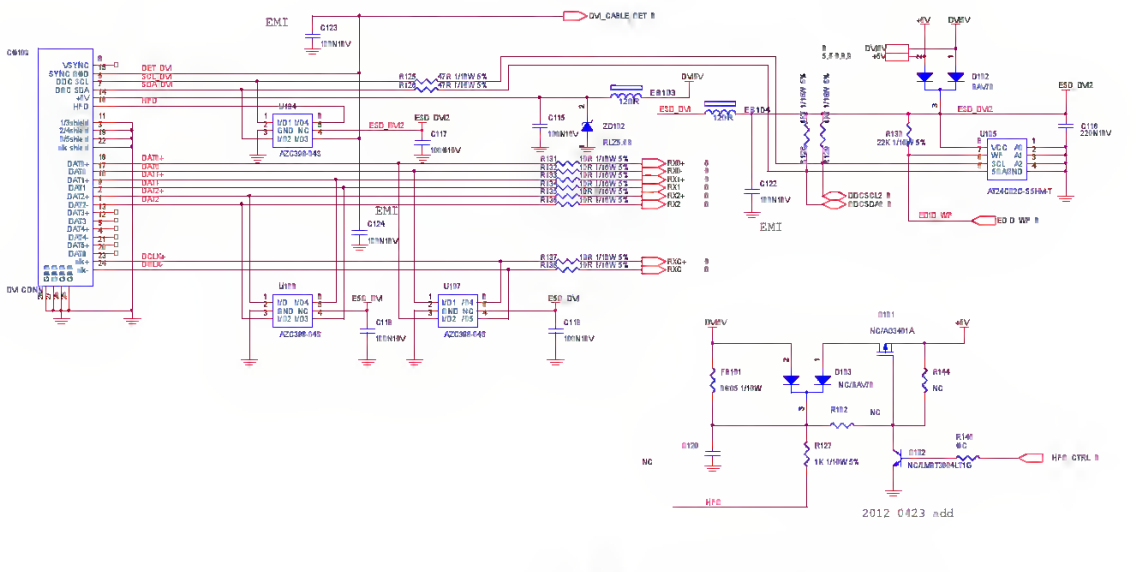
9. Schematics and Layouts

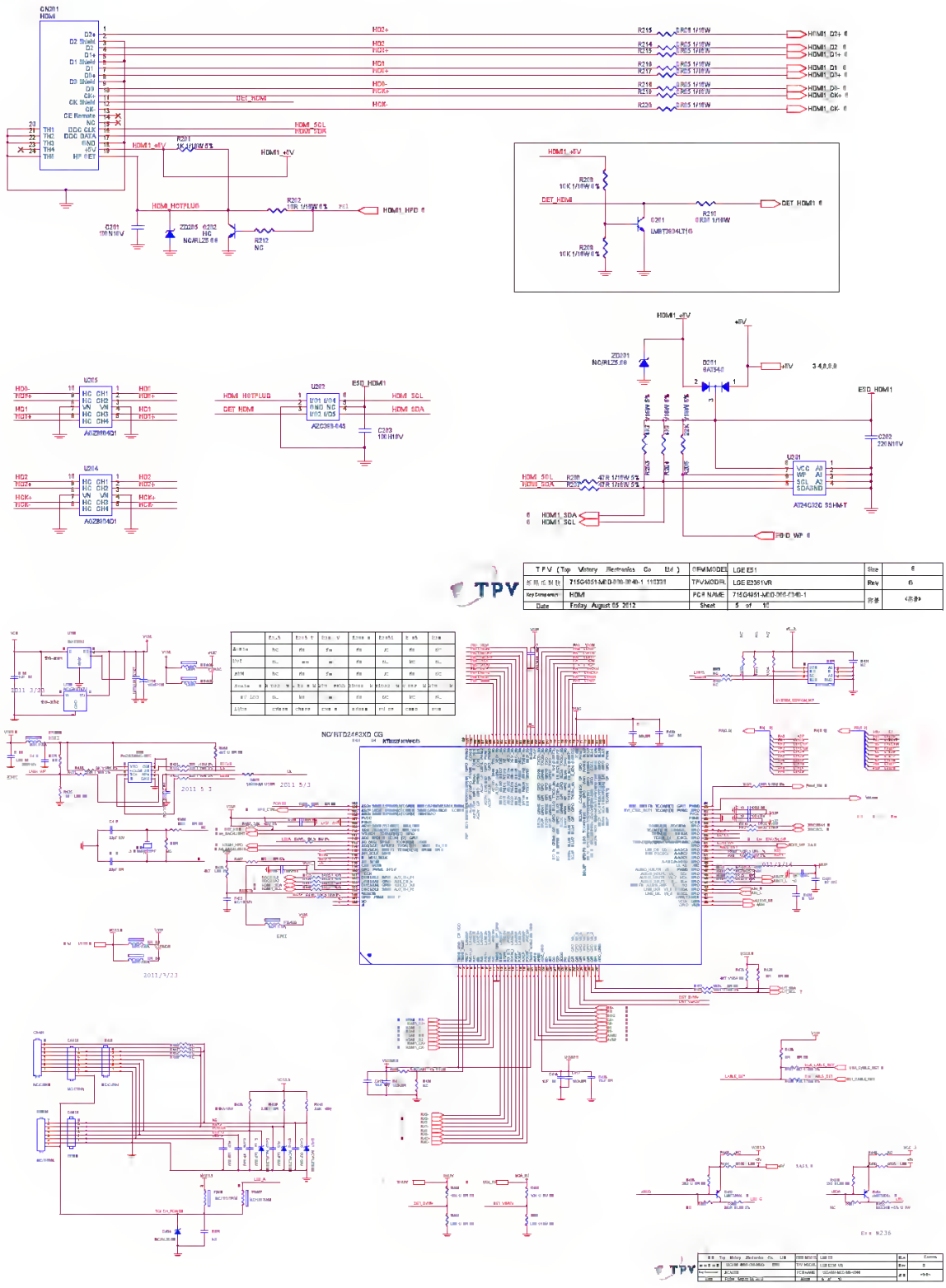
9.1 Schematics

Main Board

715G5757M0D000004L

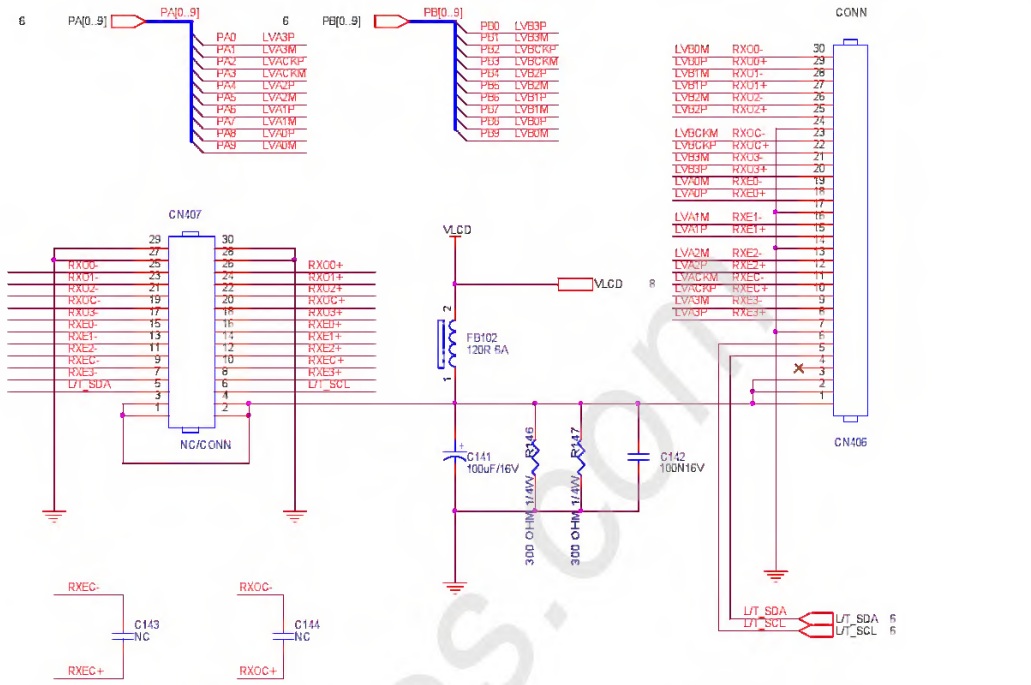




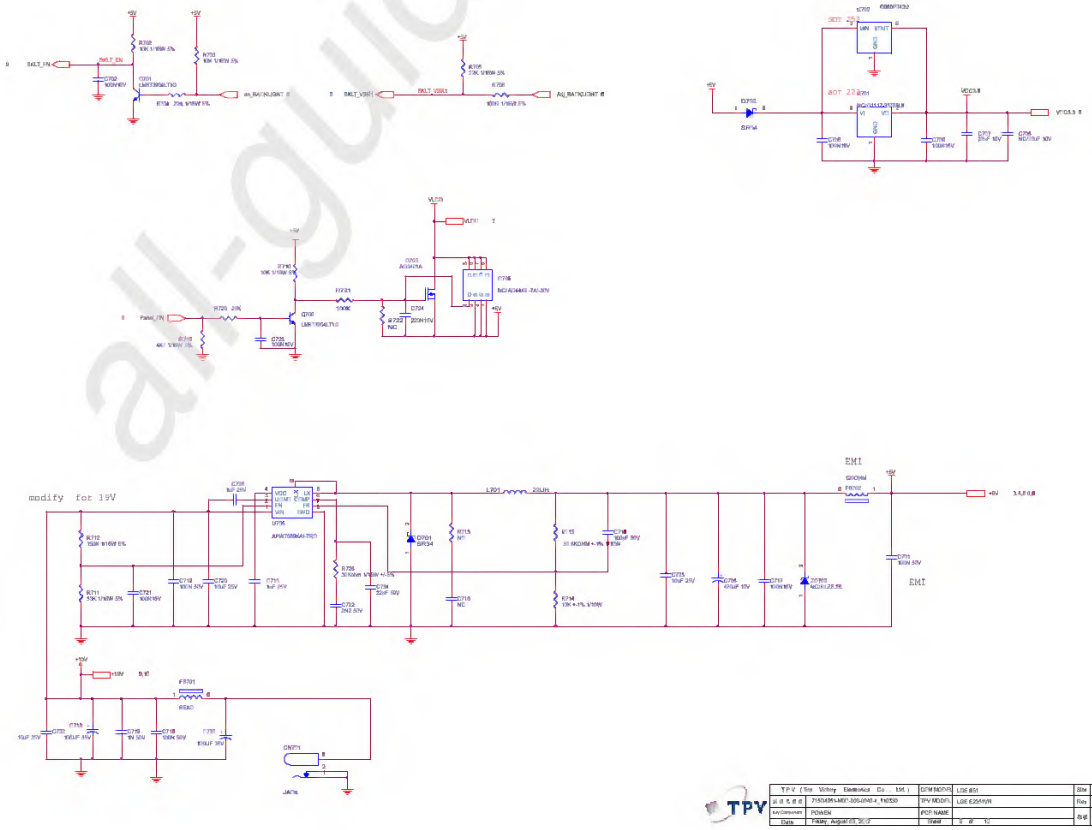


T P V (Top Victory Electronics Co Ltd.)		PWMODEL	LGE E51	Size	B
715G4051-MD0-B00-004-1 110331		TPVMODEL	LGE E2351VR	Rev	05
Key Component	HDMI	PCB NAME	715G4051-MD0-B00-004-1	张数	4张中
Date	Friday, August 05, 2011	Sheet	5 of 15		

All manuals and user guides at all-guides.com



TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	LGE E51	Size	A
版面版號	715G4951-M0D-000-0040-1_110330	TPV MODEL	LGE E2351VR	Rev	D
Key Component	LVDS PANEL I/O	PCB NAME	715G4951-M0D-000-0040-1	除爹	<除爹>
Date	Friday, August 03, 2012	Sheet	7 of 10		



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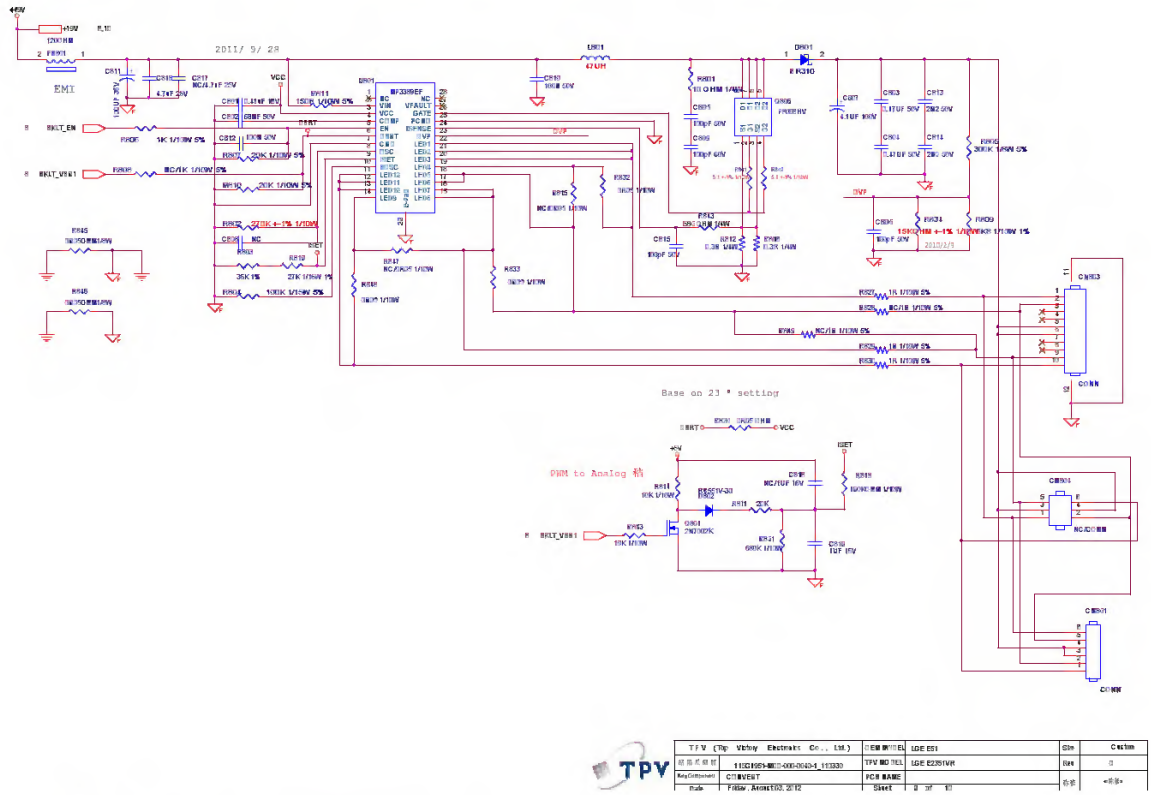

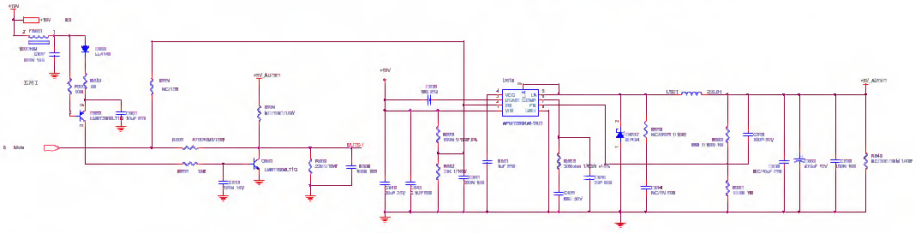

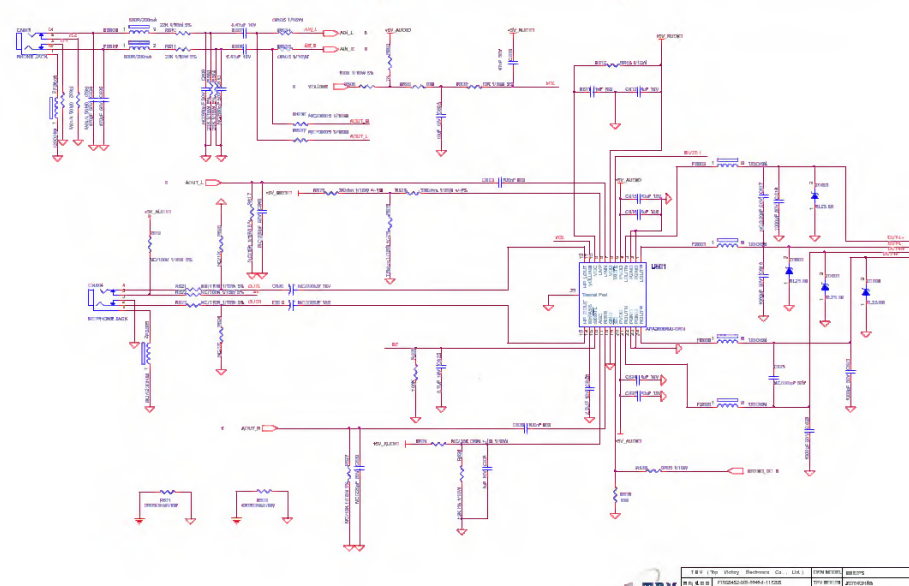

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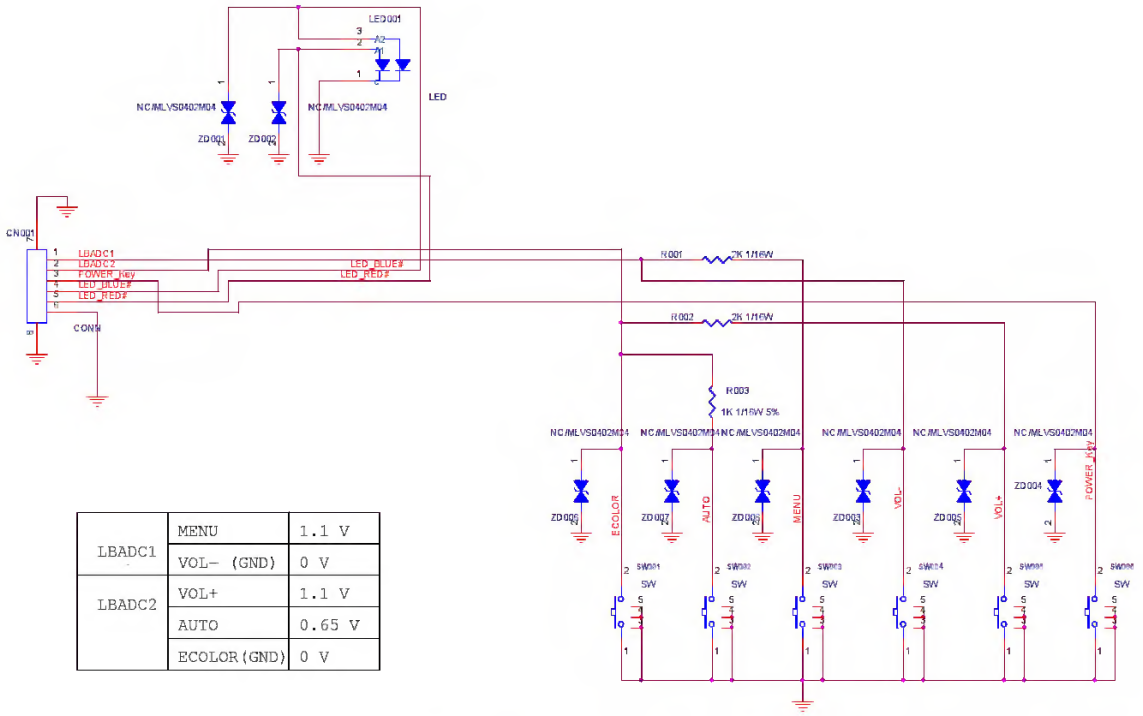
Key Board

715G5673K01000004Q



LBADC1	MENU	1.1 V
	VOL- (GND)	0 V
LBADC2	VOL+	1.1 V
	AUTO	0.65 V
	ECOLOR(GND)	0 V

TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	Acer S239HL keypad	Size	A4
研發單位		TPV MODEL	ecer	Rev	A
Key Component	02.KEY	PCB NAME		備註	<備註>
Date	Monday, May 14, 2012	Sheet	2 of 2		

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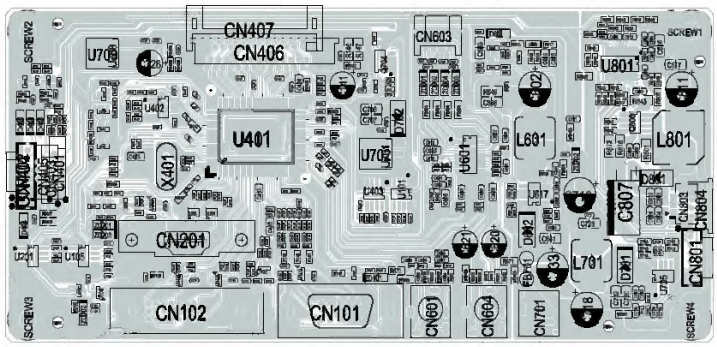
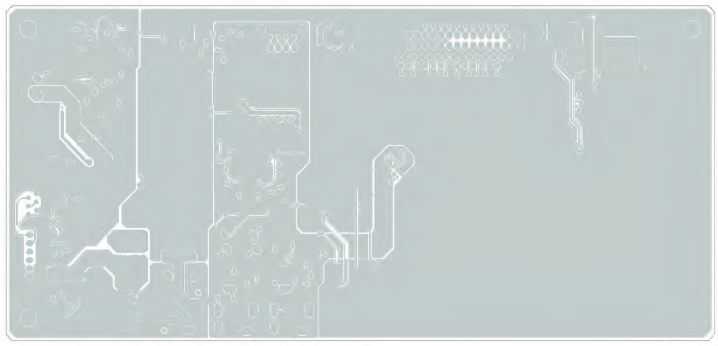
9.2 Layouts

Main Board

715G5757M0D000004L





Key Board

715G5673K01000004Q